Areas Covered

Before Reading This Manual

This section explains the notes for your safety and conventions used in this manual.

Chapter 1 Overview

This chapter explains component names and basic operations of this server, as well as an overview of the software provided with this server. In addition, the workflow, from placing the server to starting the operation, is also described.

Chapter 2 Checking before OS Installation

This chapter explains the preparation on the server and cautions necessary before OS installation. Please read this chapter before starting installation.

Chapter 3 OS Installation

This chapter explains how to install the OS in the server using ServerStart.

Chapter 4 Operations after OS Installation

This chapter explains the operations to be performed after OS installation. Be sure to perform those operations before operating the server.

Chapter 5 High Reliability Tools

For stable PRIMERGY server operations, we recommend that high reliability tools be installed. This chapter explains the installation and necessary settings of high reliability tools.

Chapter 6 Installing Internal Options

This chapter explains how to install internal options.

Chapter 7 Configuring Hardware and Utilities

This chapter explains how to make the environment settings necessary to operate the server and how to use each utility.

Chapter 8 Operation and Maintenance

This chapter explains the operations that become necessary after starting to use this server as well as daily care and maintenance.

Appendix

This appendix explains the specifications for the server and for its internal options.

Before Reading This Manual

For Your Safety...

This manual contains important information, required to operate this product safely.
Thoroughly review the information in this manual before using this product. Especially note the points under "Safety Precautions" provided with the Chassis or Server Blade, and only operate this product with a complete understanding of the material provided.
This manual and "Safety Precautions" should be kept in an easy-to-access location for quick reference when using this product.

Safety of Laser

This product contains Class 1 laser product, which is compatible with U.S. FDA 21 CFR, Subchapter J and International Standard IEC 60825-1. Do not look at the light source of laser beam directly. Doing so may lead to visual damage.

Data Backup

To protect data stored in this product (including basic software such as the operating system and application software), perform backup and other necessary operations. Note that data protection is not guaranteed when repairs are performed. It is the customer's responsibility to maintain backup copies in advance.
In case of data loss, Fujitsu assumes no liability for data maintenance or restoration and damages that occur as a result of the data loss for any reason, except for items covered under warranty.

High Safety

This product is designed, developed and manufactured as contemplated for general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but is not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage, or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. You shall not use this product without securing the sufficient safety required for the High Safety Required Use. If you wish to use this product for High Safety Required Use, please consult with our sales representatives in charge before such use.

Problems may occur with this product in the event of an instantaneous voltage drop of the power supply due to lightning, etc. To prevent an instantaneous voltage drop of the power supply, we recommend that you use an uninterruptible power supply system.

■ Trademarks

Microsoft, Windows, Windows Server, and Hyper-V are trademarks or registered trademarks of Microsoft Corporation in the USA and other countries.
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Other products are copyrights of their respective manufacturers.

Remarks

■ Warning descriptions

Various symbols are used throughout this manual. These are used to emphasize important points for your safety and that of others. The following are the symbols and their meanings. Fully understand these symbols when reading this manual.

WARNING	Failure to observe this warning may cause serious injury or death, and/or destroy the system.
CAUTION	Failure to observe this warning may lead to injury, destruction of the system, or loss of data.

The following symbols are used to indicate the type of warning or caution being described.

	A triangle mark emphasizes the urgency of the WARNING and CAUTION. Details are described next to the triangle.
	A barred circle (⃠) warns against certain actions (Do Not). Details are described next to the circle.
	A black circle indicates actions that must be taken. Details are described next to the black circle.

■ Symbols

Symbols used in this manual have the following meanings.

IMPORTANT	These sections explain prohibited actions and points to note when using this device. Make sure to read these sections.
POINT	These sections explain information needed to operate the hardware and software properly. Make sure to read these sections.
→	This mark indicates reference pages or manuals.

■ Key descriptions / Operations

Keys are represented throughout this manual in the following manner.

E.g.: [Ctrl] key, [Enter] key, [→] key, etc.

The following indicate pressing several keys at once:

E.g.: [Ctrl] + [F3] key, [Shift] + [↑] key, etc.

■ DVD-ROM drive description

In this manual, DVD-ROM drive is described as CD/DVD drive.

■ Entering commands (keys)

Command entries are displayed in the following way.

```
diskcopy  a:  a:
          ↑   ↑
```

- At each blank in a command line (as pointed out above), press the [Space] key once.
- When using Windows or DOS OS, commands are not case sensitive.
- CD/DVD drive names are shown as [CD/DVD drive]. Enter your drive name according to your environment.

  [CD/DVD drive]:\setup.exe

■ Screen shots and figures

Screen shots and figures are used as visual aids throughout this manual. Windows, screens, and file names may vary depending on the OS, software, or configuration of the server used. Figures in this manual may not show cables that are actually connected for convenience of explanation.

■ Consecutive operations

Consecutive operations are described by connecting them with "–".

Example: Procedure of clicking the [Start] button, pointing to [All programs], and clicking [Accessories]

↓

Click [Start] – [All programs] – [Accessories].

■ Abbreviations

The following expressions and abbreviations are used throughout this manual.

table: Abbreviations of Product names

Product name	Expressions and abbreviation		
PRIMERGY RX300 S4	This server or the server		
Microsoft® Windows Server® 2008 Standard	Windows Server 2008 Standard or Windows Server 2008 Standard (32-bit), Windows Server 2008 Standard (64-bit)	Windows Server 2008 or Windows Server 2008 (32-bit), Windows Server 2008 (64-bit)	Windows
Microsoft® Windows Server® 2008 Standard without Hyper-V™			
Microsoft® Windows Server® 2008 Enterprise	Windows Server 2008 Enterprise or Windows Server 2008 Enterprise (32-bit), Windows Server 2008 Enterprise (64-bit)		
Microsoft® Windows Server® 2008 Enterprise without Hyper-V™			
Microsoft® Windows Server® 2003, Standard Edition	Windows Server 2003, Standard Edition	Windows Server 2003	
Microsoft® Windows Server® 2003, Enterprise Edition	Windows Server 2003, Enterprise Edition		
Microsoft® Windows Server® 2003 R2, Standard Edition	Windows Server 2003 R2		
Microsoft® Windows Server® 2003 R2, Enterprise Edition			
Microsoft® Windows Server® 2003, Standard x64 Edition	Windows Server 2003 x64*1		
Microsoft® Windows Server® 2003, Enterprise x64 Edition			
Microsoft® Windows Server® 2003 R2, Standard x64 Edition	Windows Server 2003 R2 x64		
Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition			
Microsoft® Windows® Preinstallation Environment	Windows PE		
Microsoft® Windows® XP Professional	Windows XP Professional		
Microsoft® Windows Server® 2003 Service Pack	Service Pack		
Microsoft® Windows Server® 2003 x64 Service Pack			
Red Hat Enterprise Linux ES (v.4 for x86)	Linux		
Red Hat Enterprise Linux ES (v.4 for EM64T)			
Red Hat Enterprise Linux AS (v.4 for x86)			
Red Hat Enterprise Linux AS (v.4 for EM64T)			
Red Hat Enterprise Linux 5 (for x86)			
Red Hat Enterprise Linux 5 (for Intel64)			

*1: Unless otherwise noted, Windows Server 2003 can also mean Windows Server 2003 x64.

Reference Information

■ Server types

Server types are described as follows.

table: Server types

Type	Expression and abbreviation
Servers without an internal hard disk	Diskless Type

■ Software manuals

Software Manual contains other reference information and cautions for ServerStart not described in this manual. Please read it before using ServerStart.
Software Manual is contained as a "README.TXT" file in the root folder on the PRIMERGY Startup Disc. Use a text editor to read it.

■ Latest information about software provided with this server

For the latest information regarding ServerStart, ServerView, and other software provided with this server, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

Warning and Caution Labels

Warning and caution labels are found on the server.
Do not remove or stain these labels.

Contents

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Chapter 2 Checking before OS Installation

Chapter 3 OS Installation

Chapter 4 Operations after OS Installation

Chapter 5 High Reliability Tools

Chapter 6 Installing Internal Options

Chapter 7 Configuring Hardware and Utilities

Chapter 8 Operation and Maintenance

Appendix

Chapter 1

Overview

This chapter explains component names and basic operations of this server, as well as an overview of the software provided with this server. In addition, the workflow, from placing the server to starting the operation, is also described.

1.1 RX300 S4

This server has the following features.

■ High reliability

● Advanced memory protection function

The server supports the Single Device Data Correction (SDDC) function using PC2-5300F (DDR 2-667) compliant memory (Fully Buffered DIMM). Also, memory mirroring and memory sparing functions are supported to enable data recovery in the event of a memory error.

● Disk array system configuration

An array can be configured using the installed SAS RAID Ctrl (MegaRAID SAS).

● Redundant function

The hard disk units, power supply units, and system fans support the redundant function.
When an array is configured, a failed hard disk can be replaced or repaired without turning off the server and peripheral devices (a hot plug is supported in configurations other than RAID0).
Adding an optional power supply unit enables the redundant function.

● Hardware and software designed for data security

The locks on the rack and security (password) setting in the BIOS Setup Utility protect hardware and data assets in the server against theft, ensuring data security with high reliability.

● Proactive fan function

When a fan fails or the ambient temperature rises, the system fan speed is increased automatically to avoid increase in temperature in the server, ensuring stable server operation.

● Remote management control function

This server has a function of the onboard remote service board. By using the Remote Management Control function, you can use the Web interface to power on/off or reset the server (remote control function) and to monitor the server.

For details, refer to "Appendix D Remote Management Controller" (→p.256).

● High reliability tools

There are various high reliability tools available, such as [ServerView], which observes the server state and offers stable system operation. For information about high reliability tools, refer to "1.2.2 High Reliability Tools" (→p.19).

■ High-speed processing

● Intel® Xeon® processors

The server can have up to two Intel® Xeon® processors for high-speed data processing (one processor in standard servers).

● PCI-Express, PCI-X

The server uses PCI-Express buses with a maximum data transfer speed per one lane and one direction of 2.5Gbps and PCI-X bus with a maximum data transfer speed of 1066Mbps, which provide high-speed data transferring.

■ Compact design and scalability

● Space saving 2U design

This server is slim, with a thickness of 2U. The server, display device, keyboard, and external SCSI/SAS options fit in a 19-inch rack, which saves the installation space.

● Maximum memory size of 48GB employing memory board

In addition to the preinstalled 1GB memory with two memory board slots, the system has 12 memory banks for supporting up to 48GB memory.

● Hard disk bay

Up to six internal hard disk units can be installed in the 3.5-inch storage bays.

● With a standard internal DVD-ROM unit

The server has one standard internal DVD-ROM unit.

● Seven PCI slots

The server has seven Lowprofile PCI slots, including six PCI-Express slots (One of them is a dedicated slot for the SAS RAID Ctrl) and one PCI-X slot. Functions can be added by using expansion cards.

1.2 Supplied Software

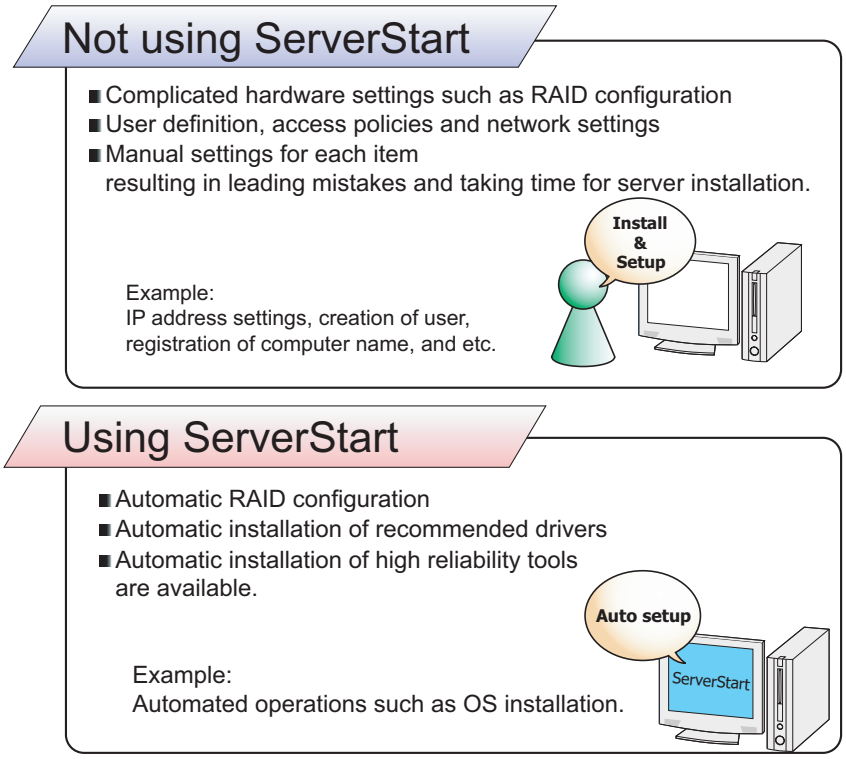
The following software is supplied together with the server. ServerStart supports setting up the system and high reliability tools prevent troubles while server system is running.

1.2.1 Setup Support Tool - ServerStart

ServerStart is an initial setup support tool for PRIMERGY. It offers simple procedures for setup and proper installation for recommended drivers.

■ Setting up with ServerStart

When performing the OS installation with ServerStart, drivers which are corresponding to the automatically recognized expansion cards will be installed by ServerStart. In addition, high reliability tools and array controller management tools are automatically installed. It prevents the related errors. It is recommended to perform the OS installation with using ServerStart.



POINT

- Some operations such as a license window and media replacements are required to be performed manually.
- High reliability tools are software with comprehensive strength for stable system operation of the server management.

■ Merit with ServerStart setup

● Network configuration (only for Windows Server 2003)

ServerStart can configure a network on server installation. For details on available network patterns, refer to "Using ServerStart to Configure the Network".

● Automatic driver installation

This function installs the recommended drivers for such as automatically recognized expansion cards on the server installation. It is preventative for mismatch driver installations, such as previous version or incompatible drivers.

● Automatic RAID configuration

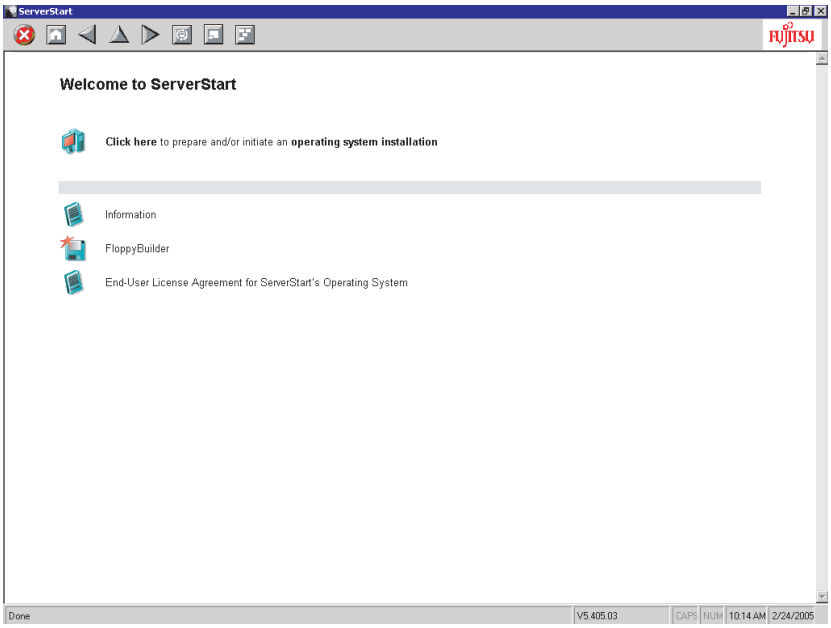
Without RAID utility, disk array can be configured by specifying a RAID type and number of hard disk unit.

■ Intuitive user interface

The intuitive user interface allows you to easily set the necessary information.

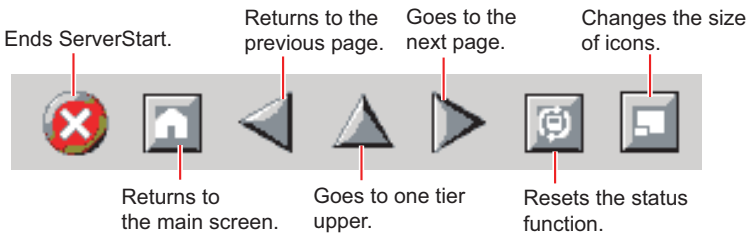
● Main window

When ServerStart starts up, the following window appears. The window and tool bar differ, depending on the mode.



● Tool bar

For the expert mode

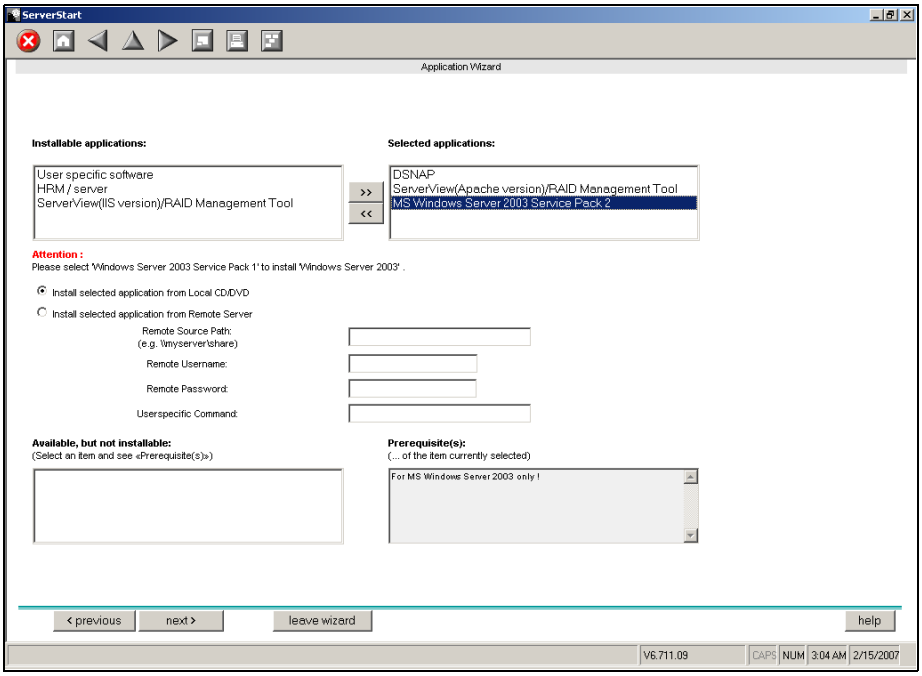


IMPORTANT

- While the wizard is running, do not click the icon to move to the previous or next window or to upper tree level. To move to a different window, click the [Previous], [Up], or [Next] button at the bottom of the wizard window.

● Wizard window

Clicking a wizard displays a wizard window.
Set each item in the wizard window. To move to a step in the next wizard window, click the operation button at the bottom of the window. Clicking [help] displays an explanation for setting the item.



1.2.2 High Reliability Tools

High reliability tools provide comprehensive supports for stable system operations of the server. The following tools have individual management function through normal operations to restoration from errors:

- Server monitoring tools
- System diagnosis support tool
- LAN driver advanced setup tools

■ Server monitoring tools

The server monitoring tools monitor the hardware status and notify the event of an error when irregular status occurs.

● Early detection of a server failure [ServerView]

ServerView monitors the server status to protect important server resources. The server hardware keeps under observation all the time and a potential irregular status will be notified in timely manner when it is detected. A corrective action can be taken in early stage and eliminate the system error before growing a serious matter.

IMPORTANT

- For notes of security for ServerView, refer to "● Security" in Section "1.1.7 Note", ServerView User's Guide.

● Maintenance support tool [HRM/server]

HRM/server performs the server maintenance operation promptly and surely to retain stable system operation.

● Early detection of a disk problem [RAID Management Tool]

RAID Management Tool monitors a configured disk array performance. When an event occurs, it leaves an event log in the event viewer's application logs. At the same time, a pop-up window indicates a hard disk failure, rebuild status, etc.

■ System diagnosis support tools

The system diagnosis support tools boost device management in order to perform stable server operation.

● Early solution to problems [DSNAP]

DSNAP is a command line utility for collectively acquiring failure analysis information. Command line operation makes easy to set the configuration information of the system file and major registries, and collect the event log. When a problem occurs in your Windows Server 2008 or Windows Server 2003 system, DSNAP is used for a support engineer to understand your system software configuration and settings correctly and to promote research smoothly. Provide this with memory dump to your support engineer.

■ LAN driver advanced setup tools

These tools set details on the LAN, including the Teaming (load balance) function and VLAN configuration.

● Broadcom Advanced Control Suite (BACS)

BACS is a tool for setting details on the onboard LAN.

● Intel® PROSet

Intel® PROSet is a tool for setting details on the LAN card in case such as using Teaming function between LAN cards, and configuring a VLAN with LAN card.

1.2.3 Installing High Reliability Tools

Collective installation all high reliability tools, provided with PRIMERGY, may be made by specifying them in "Application Wizard".
The following high reliability tools are installed with ServerStart.

table: High reliability tools installation

High reliability tool	ServerStart installation	
	Quick Installation mode	Expert mode
ServerView Console (for Apache)*1	I	S
ServerView Console (for IIS)*1	M	N
RAID Management Tool/ServerView Agent*2	I	I
HRM/server	I	N
DSNAP	I	S
Broadcom Advanced Control Suite (BACS)*1	I	I
Intel® PROSet*1	I	I

I: Installed automatically
N: Installed if selected (Not selected by default)
S: Installed if selected (Selected by default)
M: Install manually
*1: Not supported in Windows Server 2008 Server Core installation environment
*2: For Windows Server 2003, ServerView Agent is not displayed in the menu.

IMPORTANT

- Linux do not support batch installation with ServerStart.
- ServerView is required configuration after installation even when the high reliability tools have been installed at once with ServerStart. Refer to "Chapter 5 High Reliability Tools" (→p.125).

POINT

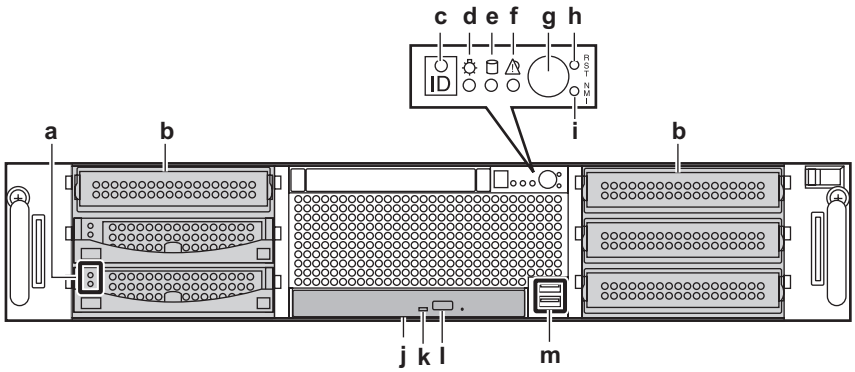
- When using ServerStart to install the OS, RAID Management Tool and ServerView Agent are installed together. These cannot be selected individually. Also, the choice cannot be released.
- To use all functions of ServerView, "Java2 Runtime Environment Standard Edition" and "Web server" are required. When using ServerStart to install the OS, "Java2 Runtime Environment Standard Edition" is installed automatically. For Web server, you can use either of the following by selecting a menu.
  - ServerView Console (for Apache)
    Install ServerView Web-Server (Web server for ServerView, Apache for Win32 base) and install ServerView configuring to use this Web server.
  - ServerView Console (for IIS)
    Install Microsoft Internet Information Server (IIS) supplied with Windows separately. ServerView is installed with the setting to operate using IIS.

- When IIS is not found in the system, ServerView Web-Server is installed even if "ServerView Console (for IIS)" is selected.
  ServerView Console (for Apache) is selected by default. To install ServerView Console (for IIS), select "ServerView Console (for IIS)".
  If "ServerView Console (for IIS)" is selected, ServerView Console (for Apache) is not installed.
  ServerView Console (for IIS) cannot be installed in Quick installation mode.
  For Windows Server 2008, ServerView Console (for IIS) cannot be installed.
- In Windows Server 2008 Server Core installation environment, ServerView Console (for Apache)/ ServerView Console (for IIS) is not supported.
- When installing Broadcom Advanced Control Suite (BACS), Microsoft.NET Framework 3.5 will be installed at the same time.
- Intel® PROSet will be installed only when an optional LAN card is installed properly and the driver is applied correctly.
- If the OS is installed on other than drive C using ServerStart, Intel® PROSet will not be installed. In this case, install Intel® PROSet manually. For details, refer to "4.7.1 Intel® PROSet Installation" (→p.118).

1.3 Component Names and Functions

This section explains the component names and functions of the server.

1.3.1 Server (Front View)



a Hard disk status display LED ( )

Indicates the state of the internal hard disk unit. The following shows the meaning of each LED.

- Hard disk access display LED ( )

  This LED lights up green when data is being written to or read from the hard disk.

- Hard disk failure LED ( )

  During array system configuration, this LED lights up amber when an error is detected in the internal hard disk unit. It is lit or blinks depending on the hard disk status as follows.

table: Hard disk status

LED status	Hard disk status
Off	Normal mode
Amber	Hard disk failure
Blinks in amber	Rebuilding or replacing the faulty hard disk

b 3.5-inch storage bay

Install the internal hard disk unit or internal backup device into the server unit.

c System identification LED button

When pressing this button, the front and rear system identification LEDs are lit blue so that the locations of devices being maintained can be determined.

d Power LED ( )

It is lit depending on the power supply status of the server as follows.

table: Power status

LED status	Power status
Off	The power does not supplied.
Amber	Normal status (standby mode)
Green	Normal status (operating mode)

e Hard disk access LED ( )

This LED lights up green when data is being written to or read from the hard disk.

f Front maintenance LED ( )

This LED lights or blinks in yellow when an error is detected in the server components. If this LED lights, contact an office listed in the "Contact Information" of the "Start Guide".

g Power switch ( )

Press this switch to turn the server on.

IMPORTANT

- Do not turn the server off when the hard disk access LED is blinking. Data in the hard disk may be damaged.

h Reset switch (RST)

Pressing this switch resets and restarts the system.

IMPORTANT

- When the hard disk access LED lights, do not reset the system. Data in the hard disk may be damaged.

i Maintenance switch (NMI)

This switch is used only by maintenance personnel. Do not touch this.

j CD/DVD drive

Insert CD/DVD.

k CD/DVD access LED

Lights up or blinks when reading data from CD/DVD.

l CD/DVD eject button

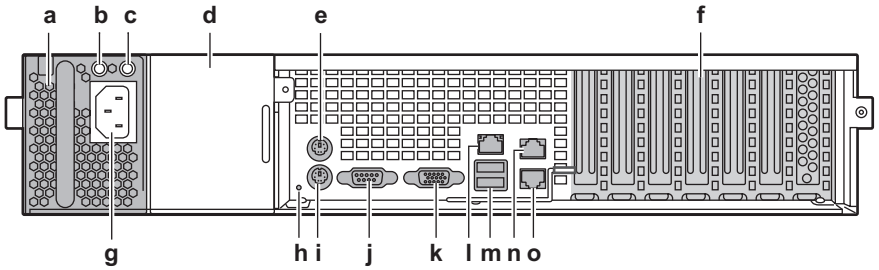
Push the button when inserting or ejecting CD/DVD.

Do not push the button when the CD/DVD access LED lights up or blinks.

m USB connector ( )

Connects peripheral equipment conforming to the USB standard (2.0 or 1.1).

1.3.2 Server (Rear View)



a Power supply unit slot 1 (installed standardly)

One power supply unit is installed by default.

b Power supply unit failure LED

The LED indicates the power supply unit status. When a failure occurs, this LED lights up amber.

c Power supply unit LED

This LED is on, depending on the power supply status as follows.

table: Power supply unit status

LED status	Power supply status
Lights green	In normal mode (operating mode)
Lights yellow	In normal mode (standby mode)
Off	Power not supplied (power off)

d Power supply unit slot 2 (optional)

An optional power supply unit can be installed. Up to two units can be installed.

Adding a power supply unit enables redundant power supply function.

e Mouse connector (6 pins) ( )

A mouse is plugged in.

f PCI slot

g Inlet

Power cables are plugged in.

h Rear maintenance LED / System identification LED (/ ID)

When an error is detected in a server component, this LED lights or blinks in yellow (OFF in normal status).

When this LED lights or blinks, contact an office listed in the "Contact Information" of the "Start Guide".

When pressing the system identification LED button located on the front of the server, the front and rear LEDs are lit blue so that the locations of devices being maintained can be determined. Also, the [System Identification LED Display] button of ServerView can be used to light them.

i Keyboard connector (6 pins) ( )

A keyboard is plugged in.

j Serial port (9 pins) (1)

Cables of peripheral equipment conforming to the RS-232C standard such as modems are plugged in. This port can also be used as a server management port by changing BIOS setting. For how to use the server management port, refer to "Appendix C Remote Control Function" (→p.251)

k Display connector (15 pins) ( )

A display cable is plugged in.

l Service LAN port (10/100BASE-T connector) ( )

By connecting a LAN cable, the remote management controller function can be used with the Web interface.

When using Remote Management Controller, refer to "Appendix D Remote Management Controller" (→p.256).

The meanings of the two LEDs are shown in the table below.

table: LAN connection status

LED location	LED status	Connection status
Left	Green	Link is being established.
	Off	Link is not established.
Right	Green	Connection is established at 100Mbps.
	Off	Connection is established at 10Mbps or the LAN is not connected.

m USB connector ( )

Connects peripheral equipment conforming to the USB standard (2.0 or 1.1).

n LAN port 2 (10/100/1000BASE-T connector) (2)

An Unshielded Twisted Pair (UTP) cable is plugged in. For 1000Mbps connection, a cable conforming to category 5 enhanced is required. The meanings of the LEDs are as follows.

table: LAN connection status

LED location	LED status	Connection status
Left	Green	Link is being established.
	Off	Link is not established.
Right	Amber	Connection is established at 1000Mbps.
	Green	Connection is established at 100Mbps.
	Off	Connection is established at 10Mbps or the LAN is not connected.

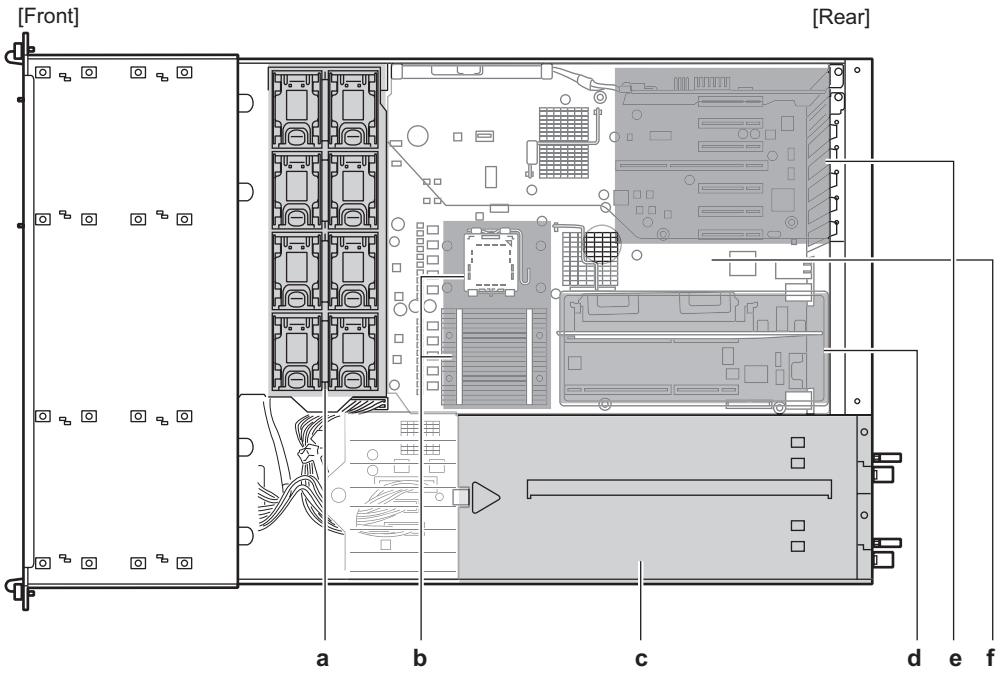
o LAN port 1 (10/100/1000BASE-T connector) (1)

An Unshielded Twisted Pair (UTP) cable is plugged in. The cables to be used and meanings of the two LEDs are the same as the LAN port 2.

POINT

- Pull up the LAN cable removal lever on the right side of the port to release the lock. If the lock cannot be released because of the cable type, use a flathead screwdriver, etc. to release it.

1.3.3 Server (Internal)



a System fan

The system fan has a redundant configuration and a failed system fan can be replaced while the system is running.

Contact an office listed in the "Contact Information" of the "Start Guide" for the system fan replacement.

b CPU sockets

Install the CPU. One CPU is installed by default. Up to two CPUs can be installed.

c Power supply unit

Install the power supply unit. One unit is installed by default. Up to two units can be installed.

d Memory board slot

Contains memory board where memory modules are installed.

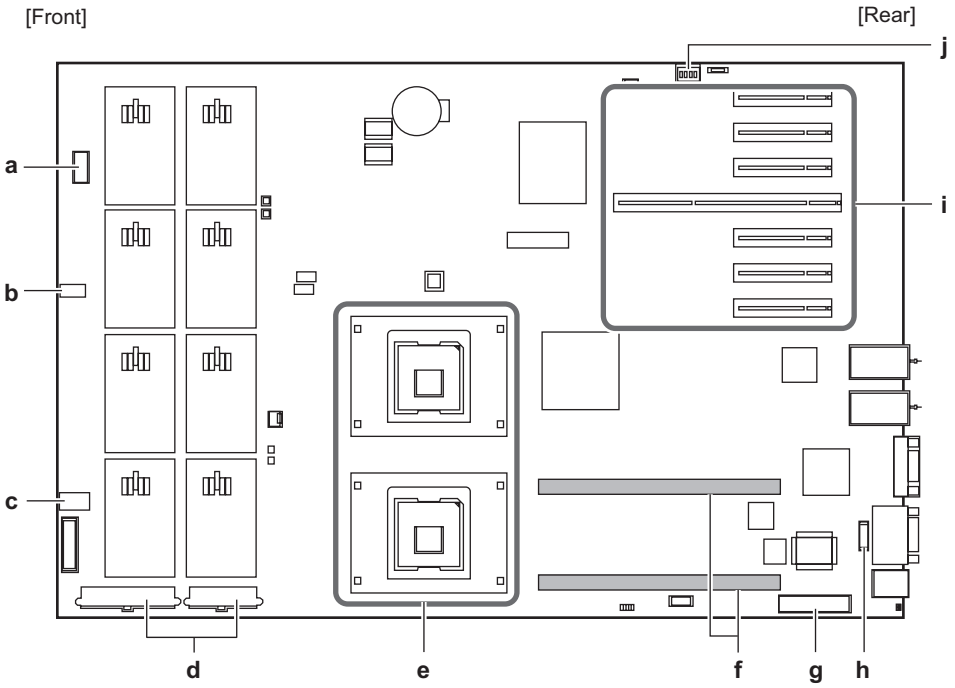
e PCI slots

Contains extension cards that enhance the server functions. Expansion cards with the PCI bus interface can be installed in the PCI slots.

The SAS RAID Ctrl is preinstalled in the PCI slot 1.

f Fan duct

1.3.4 Baseboard



a USB FRONT connector

Connect a cable for the USB connector on the front of the server.

b USB connector

Connect a USB cable when installing an internal USB backup device.

c SATA1 connector

Connect a SATA cable of the CD/DVD drive.

d Power connector

Connect a power supply unit cable.

e CPU sockets

Install a CPU.

f Memory board slot

Install memory board that contains memory module.

g Parallel port connector

Connect a parallel port cable when an optional expansion parallel port is installed.

h Serial port connector

Connect a serial port cable when an optional expansion serial port is installed.

i PCI slot

Install an expansion card.

j Switch block

For the switch block settings, refer to "7.1 Switch Block Settings" (→p.182).

1.4 Standard Operations

This section explains standard server operations, including how to turn the server on/off and handle a CD/DVD.

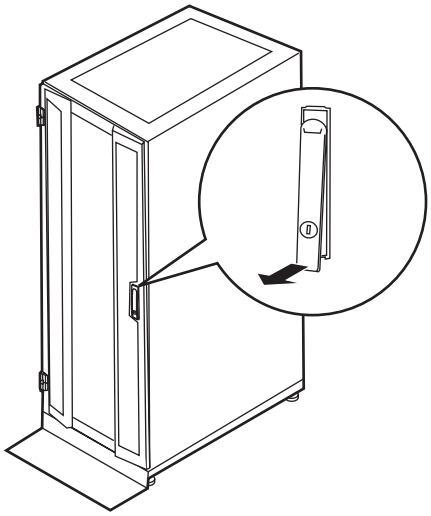
1.4.1 Opening the Rack Door

This section explains how to open the front and rear doors of the 40U standard rack.
Refer to the rack manual for procedures on opening other rack doors.

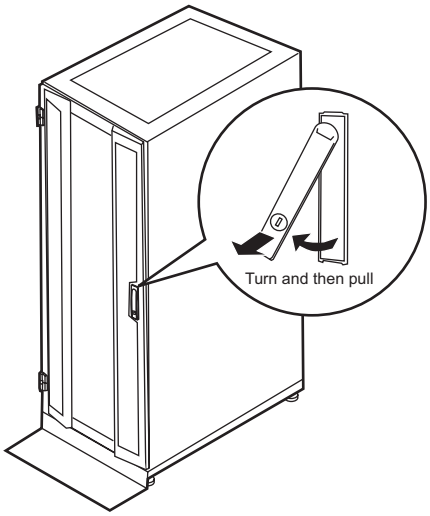
■ Opening the front door

1 Turn the rack key to unlock and pull the rack handle up.

→"8.4.1 Hardware Security" (p.230)

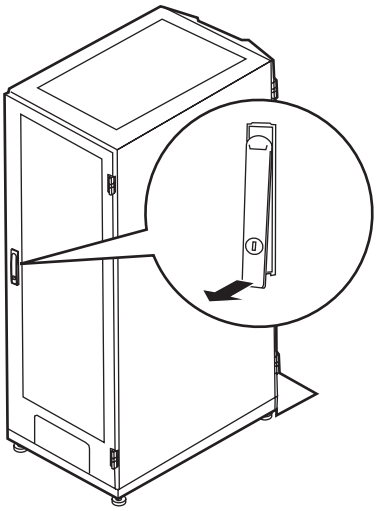


2 Turn the handle in the direction of the arrow and pull it forward.

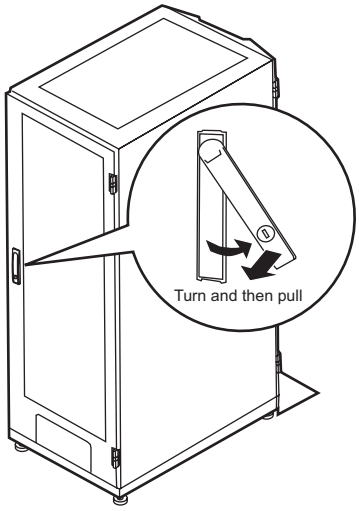


■ Opening the rear door

1 Turn the rack key to unlock and pull the rack handle up.



2 Turn the handle in the direction of the arrow and pull it forward.



POINT

- Unless you are inserting/removing media or turning the power on/off, keep the rack door closed. Doing so blocks electric waves from cell phones, etc.
- Do not lose the keys. If the key is lost, contact an office listed in the "Contact Information" of the "Start Guide".

1.4.2 Turning On the Server

CAUTION

- Do not move, strike, or shake the server when it is turned on. This can damage the hard disk in the server and cause data loss.

- Turn the server on when the temperature is in its operating environment range (10–35°C). For details on the operating environment, refer to "Start Guide" and "Safety Precautions".
  When operating the device outside of this operating environment, the server may operate improperly, damage data etc.
  Furthermore, Fujitsu cannot be held responsible for any related damage, malfunction, or loss of data, etc.
- Be sure to wait for 10 seconds or more after shutdown before turning the server on.

1 Open the rack door.

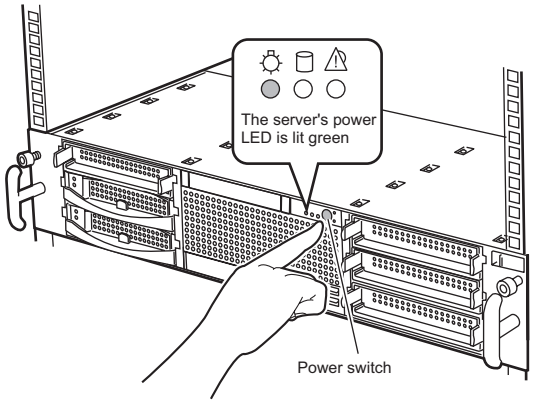
→"1.4.1 Opening the Rack Door" (p.29)

2 Make sure that the CD/DVD drive is empty.

3 Turn on the display and peripheral devices.

4 Press the power switch on the front of the server.

The server's power LED is lit green. When the power is turned on, the server performs Power On Self Test (POST). If any abnormalities are detected by POST, error messages are displayed.
→"8.2.2 Error Messages" (p.216)



POINT

- The time to turn on the server can be set with the ASR setting (on the [Power On/Off] tab) using ServerView.
  For details, refer to "3.4 Serious Error Handling (ASR)" in "ServerView User's Guide".
- It may take a few seconds until the server to power on after pressing the power switch.

1.4.3 Turning Off the Server

WARNING Electric Shock

- In the event of smoke or sparks, immediately unplug the electric cord. Failure to do so may lead to a fire or electrocution.

CAUTION

- When turning off the server, be sure to follow the procedures described in this section. Data can be lost if these procedures are not followed correctly.
- Be sure to wait for 10 seconds or longer after shutdown before turning the server on.

1 Make sure that the CD/DVD drive is empty.

2 Shut down the OS.

In the following cases, the server is turned off after the OS is shut down.

- Windows OS
- When ServerView is installed

POINT

- In other cases, shut down the OS and make sure that the hard disk access LED is off. After that, press the power switch of the server. The server's power LED lights amber.

3 Turn off the display and peripheral devices.

POINT

- The time to turn off the server can be set with the ASR setting (on the [Power On/Off] tab) using ServerView.
  For details, refer to "3.4 Serious Error Handling (ASR)" in "ServerView User's Guide".

■ Cautions for turning the power off (for a Windows Server 2008 or Windows Server 2003 OS)

The operation of the power switch can be specified as "Do Nothing", "Prompt Input" (only for Windows Server 2003), "Standby", "Hibernation", and "Shutdown" depending on the OS settings. The default is "Shutdown".

On this server, functions corresponding to "Standby" and "Hibernation" are supported as BIOS and hardware functions. However, some drivers and software installed in the server do not support these functions. For this reason, functions corresponding to "Standby" and "Hibernation" are unavailable on this server.
When the operating mode is set to "Standby" or "Hibernation", the system may operate improperly or hard disk data may be corrupted.
For details about operating mode settings, refer to the manual supplied with the OS.

1.4.4 Inserting and Ejecting a CD/DVD

This section explains how to insert and eject a CD/DVD.

WARNING Vision Damage

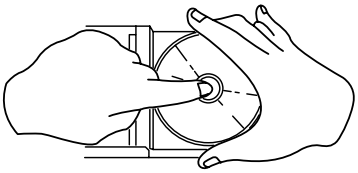
- Do not look at the light source of the CD/DVD drive laser beam directly. Doing so may lead to visual damage.

■ Cautions when handling drives

- High humidity and airborne dust levels are to be avoided. Electric shocks and/or server failures may be caused by liquids such as water, or metallic items, such as paper clips, entering a drive.
- Shocks and vibrations are also to be avoided.
- Do not insert any objects other than the specified CDs/DVDs.
- Do not pull on, press hard, or otherwise handle the CD/DVD tray roughly.
- Do not disassemble the CD/DVD drive.
- Before use, clean the CD/DVD tray using a soft, dry cloth.
- As a precaution, remove discs from the CD/DVD drive when the drive is not to be used for a long time. Keep the CD/DVD tray closed to prevent foreign matter, such as dust, from entering the CD/DVD drive.

■ Cautions when handling media

- When removing a disc from its case, press the central disc holder to release the disc as shown in the figure below, then just lift the disc up.

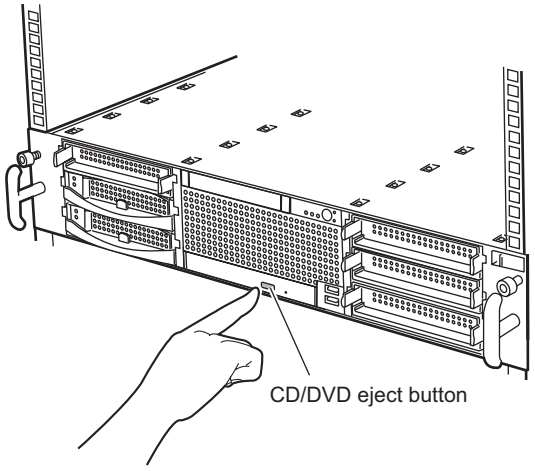


- Hold CDs/DVDs by their edges to avoid contact with the disc surface.
- Do not contaminate the CD/DVD surface with fingerprints, oil, dust, etc. If dirty, clean with a soft, dry cloth, wiping from the center to the edge. Do not use benzene, thinners, water, record sprays, antistatic agents, or silicone-impregnated cloth.
- Be careful not to damage the CD/DVD surface.
- Keep the CDs/DVDs away from heat sources.
- Do not bend or place heavy objects on CDs/DVDs.
- Do not write with ballpoint pen or pencil on the label (printed) side.
- Do not attach stickers or similar to the label side. Doing so may cause rotational eccentricity and abnormal vibrations.
- When a CD/DVD is moved from a cold place to a warm place, moisture condensation on the CD/DVD surface can cause data read errors. In this case, wipe the CD/DVD with a soft, dry cloth then let it air dry. Do not dry the CD/DVD using devices such as a hair dryer.
- To avoid dust, damage, and deformation, keep the CD/DVD in its case whenever it is not in use.
- Do not store CDs/DVDs at high temperatures. Areas exposed to prolonged direct sunlight or near heating appliances are to be avoided.

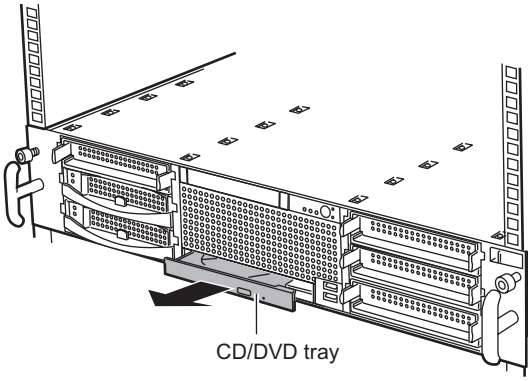
■ Inserting the CD/DVD

1 Make sure the server is turned on and press the CD/DVD eject button.

The CD/DVD tray comes out a little.

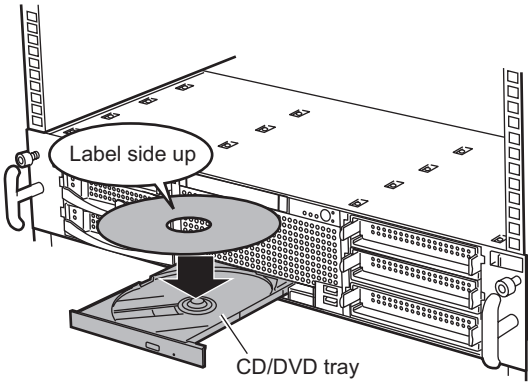


2 Pull the CD/DVD tray out.



3 Place the CD/DVD at the center of the tray.

While supporting the CD/DVD tray, push the tray until it clicks into position.



IMPORTANT

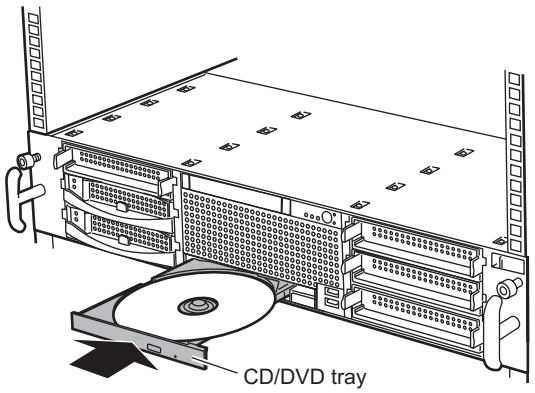
- If the CD/DVD is placed improperly when the tray is pushed into the unit, the CD/DVD or the drive may be damaged.
- Be careful not to touch the lens of the CD/DVD drive.

POINT

- When inserting a CD/DVD, the CD/DVD access LED lights up or blinks. After checking that the LED is turned off, proceed with the next procedure.

4 Move the tray back.

Push the tray gently until it clicks into position.

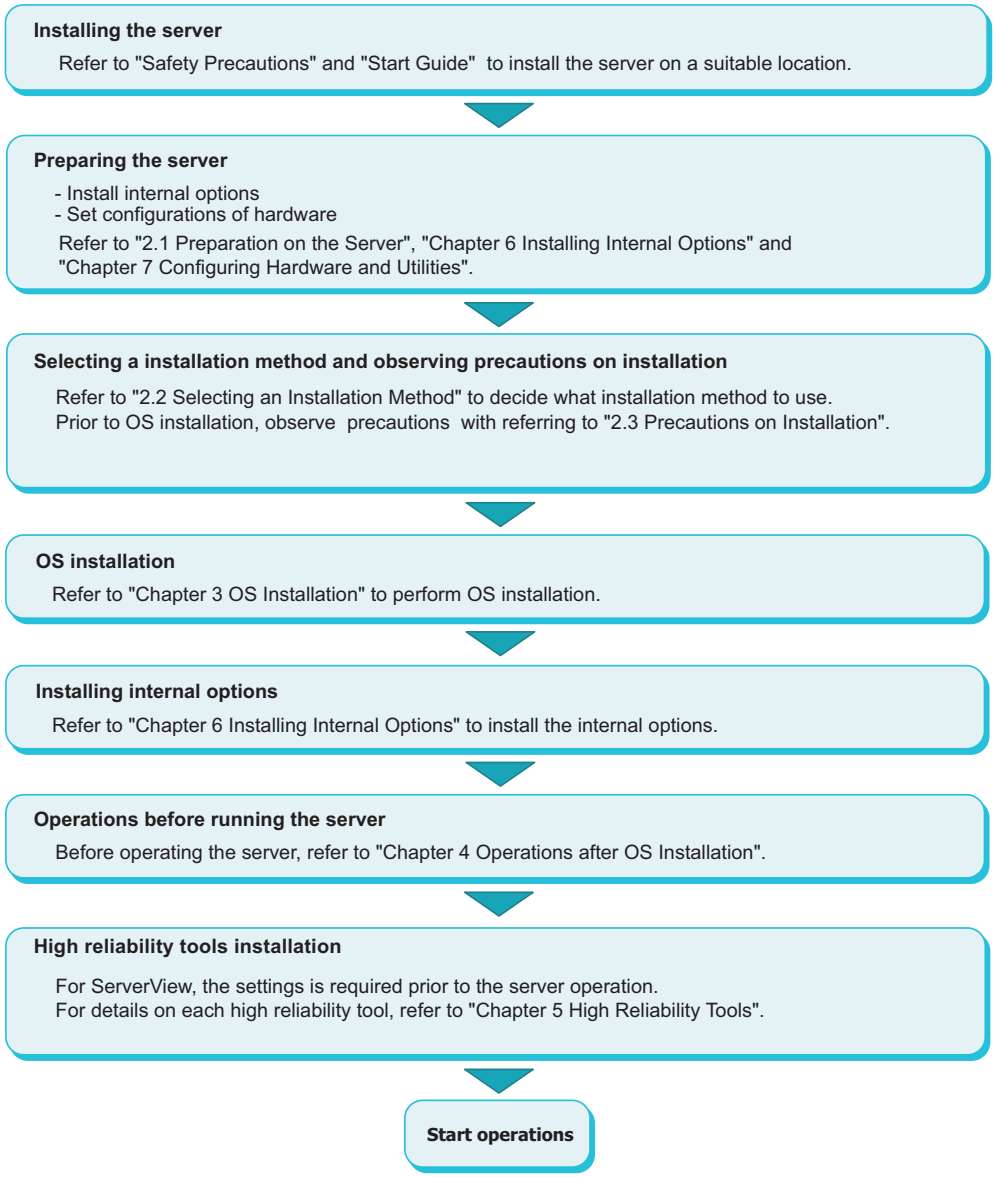


■ Ejecting the CD/DVD

To eject the CD/DVD, press the CD/DVD eject button in the same way as steps 1 to 2 in "■ Inserting the CD/DVD" (→p.34).

1.5 Workflow

Use the following workflow from server installation to start of operation.



Chapter 2

Checking before OS Installation

This chapter explains the preparation on the server and cautions necessary before OS installation. Please read this chapter before starting installation.

2.1 Preparation on the Server

Before starting installation, install internal options to the server and perform necessary hardware settings.

2.1.1 Installing Options

For procedures for installing internal options, refer to "Chapter 6 Installing Internal Options" (→p.133).

■ Installing optional external devices

When installing an OS with optional external devices connected, check the following.

- When using the PRIMERGY SX35, and a disk array configuration has already created in the internal hard disk unit that is installed in the PRIMERGY SX35, delete all of current disk array configurations once.
  When deleting the disk array configuration, internal data will be lost. Check there is no data in the disk before deleting the disk array configuration.
  When there is data (when installing the OS again, etc.), backup the data.
  After the OS installation, create a disk array configuration and restore using the backed up data.
- When using an external storage system such as the ETERNUS disk storage system, do not turn on the power of the external storage system until OS installation has completed.
- When installing optional external SCSI/SAS devices and/or USB devices (except floppy disk drives), turn off their power or unplug their connection cables from the server during OS installation. Connect them after OS installation is complete.

■ Connecting FDD unit (USB)

A floppy disk is used for OS installation using ServerStart. Connect the USB floppy disk drive unit beforehand.

IMPORTANT

- Connect the USB floppy disk drive before turning on the server's power. Otherwise, it may not be correctly recognized. For details, refer to "Appendix E Notes on Using External FDD (USB)" (→p.261).

■ Cautions for installing an expansion card

When using an expansion card, read the notes on the expansion card.

■ Cautions for installing a memory module

For this server, the maximum installable memory varies depending on the OS. Furthermore, since the server uses part of the memory as PCI resources, the maximum available capacity is limited.
The following shows the maximum installable memory capacity and the maximum available capacity.

table: Maximum Installable Capacity and Maximum Available Capacity

OS	Installed memory capacity	Available memory capacity
Windows Server 2008 (32-bit) Windows Server 2003	Up to 3.0GB	Same as the installed memory capacity
	3.0GB to installed memory capacity	3.0GB*1
Windows Server 2008 (64-bit) Windows Server 2003 x64	Installed memory capacity	Same as the installed memory capacity
Linux	Installed memory capacity	Same as the installed memory capacity

*1: When installing memory bigger than 3GB, the Physical Address Extension (PAE) must be set in the OS. Setting PAE in the OS makes the installed memory capacity the available memory capacity. For the procedure for setting PAE in the OS, refer to the Microsoft website. Also, when the Data Execution Prevention (DEP) function of the CPU is enabled, PAE in the OS is automatically enabled. However, it is recommended to set the PAE in the OS to enable it without problems.
To enable the DEP function of the CPU, start the BIOS Setup Utility, and set [NX Memory Protection] to [Enabled] in the "7.2.8 Advanced System Configuration Submenu" (→p.194) in the [Advanced] menu.

■ LAN cable

Be sure to connect the LAN cable when the server is not connected to the Internet.

IMPORTANT

- Connecting to the Internet during setup can cause security problems. Do not connect to the Internet until the setup completes.

If the OS is installed or applications are automatically installed without connecting the LAN cable to the LAN card, an error may be recorded in the event viewer after setup completes.

● When installing Windows Server 2003

Connect the LAN cable after Service Pack 2 is applied in the following situations:

- When installing Intel® PROSet

  When an optional LAN card is installed and OS is installed by using ServerStart, Intel® PROSet is automatically installed.
- When a 10Mbps half-duplex connection is used

2.1.2 Hardware Settings

The BIOS Setup Utility must be used in the following cases. For details on how to use the BIOS Setup Utility, refer to "7.2 BIOS Setup Utility" (→p.183).

■ Changing the boot drive

To change the boot drive, start up the BIOS Setup Utility, select [Boot Option], and set the boot drive in the [Boot Options] submenu under the [Main] menu.

→"7.2.4 Boot Options Submenu" (p.188)

■ When installing Windows Server 2008 (64-bit) using ServerStart

When installing Windows Server 2008 (64-bit) using ServerStart, and when saving the configuration file to a floppy disk, the boot priority must be changed as follows using the BIOS Setup Utility before ServerStart startup. If the boot priority is not changed, the automatic installation stops in the middle. Make sure to change it.

1 Turn the sever on, and start the BIOS Setup Utility.

→"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

2 Select "Boot Options".

The [Boot Options] submenu window is displayed.

→"7.2.4 Boot Options Submenu" (p.188)

3 Set the "Boot Sequence" setting value to put [Hard Drive] before [Diskette].

1. CD-ROM Drive
2. Hard Drive
3. Diskette

4 Exit the BIOS Setup Utility, and turn the server's power off.

2.2 Selecting an Installation Method

When install the OS with ServerStart, there are multiple installation methods. Prior to OS installation, choose a method.

2.2.1 Supported OS

The following OS can be installed with using ServerStart V7.808.

- Microsoft® Windows Server® 2008 Standard
- Microsoft® Windows Server® 2008 Enterprise
- Microsoft® Windows Server® 2008 Standard without Hyper-V™
- Microsoft® Windows Server® 2008 Enterprise without Hyper-V™
- Microsoft® Windows Server® 2003, Standard Edition
- Microsoft® Windows Server® 2003, Enterprise Edition
- Microsoft® Windows Server® 2003, Standard x64 Edition
- Microsoft® Windows Server® 2003, Enterprise x64 Edition
- Microsoft® Windows Server® 2003 R2, Standard Edition
- Microsoft® Windows Server® 2003 R2, Enterprise Edition
- Microsoft® Windows Server® 2003 R2, Standard x64 Edition
- Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition

POINT

- ServerStart does not support OS installation of Linux.
- Any of unsupported OS cannot be installed.
- Windows Server 2003 Service Pack 2 can be installed.

2.2.2 Installation Modes of ServerStart

■ Quick installation mode

This mode completes the OS installation by executing plain settings. Select this mode when you want to install the OS quickly and simply.
When installing Windows Server 2008 in Quick installation mode, full installation is performed.
To install the OS while maintaining the established RAID environment, the quick installation mode must be selected.
Select [Logical Disk0] in the [Select the Boot Controller and Boot Disk] window and install the OS.

■ Expert mode

In this mode, start up Disk Manager and format the partition where your OS is installed prior to installation of the OS. Select the expert mode only when installing the OS while maintaining the existing partitions.

Windows Server 2008 cannot be installed in Expert mode.

Also, when using ServerStart while maintaining the existing partitions, start up Disk Manager, format an installation partition and install the OS.

2.3 Precautions on Installation

Observe all the following notes before starting OS installation.

2.3.1 Installation Partition Size

The installation partition sizes are stated as below when using ServerStart to install your OS.

- Maximum size: 2TB
- Minimum size: 2200MB

● Notes

- When setting the OS and BOOT partitions on different partitions, specify the partition size directly.
  The BOOT partition indicates the partition for startup. Minimum information required for startup such as "ntldr" is allocated on the partition.
  The OS partition indicates the partition for installing the OS.
- In either of the following cases, specify a partition size 2TB or less.
  - When the same partition is specified as the OS and BOOT partitions
  - When different partitions are specified as the OS and BOOT partitions
- The OS cannot be installed on a partition larger than 2TB.

2.3.2 Notes on Configuring RAID

Observe the notes described as follows prior to configuring RAID.

■ Hard disk unit

- Only internal hard disk units can be used. Up to six internal hard disk units can be installed in this server. However, the number of available hard disk units that can be installed varies depending on the RAID level. For details, refer to Array Controller Document & Tool CD.
- Be sure to use hard disk units of the same model with the same capacity.

■ Array configuration

Configure RAID with an internal hard disk unit which is connected to a SAS RAID Ctrl. The array controller to be employed is "MegaRAID SAS" and available RAID level is "RAID 0 / RAID 1/ RAID 1+0 / RAID 5/ RAID 6". For details, refer to "MegaRAID SAS Users Guide" in Array Controller Document & Tool CD.

POINT

- Only one array controller is available with connecting to the internal hard disk. Multiple array controllers cannot be used.

■ When RAID-configured hard disk unit is used

Hard disk units that have been used before may have unwanted partition information or array configuration information, which may cause unexpected problems. If you connect any hard disk units with usage history to this server, format them at low level on another system before connecting them to the server. For information on how to format the hard disk, refer to the manual supplied with the system to be used.

■ Number of hard disk units

If the number of actually installed units is less than that the setting for the number of units (plus one, when hot spare is specified), installation using ServerStart is aborted because of an error.
When the number of actually installed hard disk units is larger than configured, the disk units are set up according to the setting. Extra units will be configured as standby disk units.

2.3.3 Cautions for Using ServerStart

Observe the cautions described below when the OS installation is performed with ServerStart.

■ Operating ServerStart

Mainly, a mouse is used for ServerStart operations. In some cases, operation with the [Tab] key or cursor are not available. Be sure to use a mouse while operating ServerStart.

■ Configuration file (SerStartBatch.ini)

A configuration file stores the server setup and client information configured in ServerStart. To create a configuration file, use the ServerStart floppy disk supplied with this server. Store only one file on each floppy disk. Do not set the ServerStart floppy disk to the write-protected state. You can use any name for the configuration file. However, the file must be installed in the server as "SerStartBatch.ini". When installing the configuration file, make sure to save it as "SerStartBatch.ini" on the ServerStart floppy disk. Start up ServerStart, insert the ServerStart floppy disk containing "SerStartBatch.ini", and click [Start] to install the server.

■ Ejecting PRIMERGY Startup Disc

Do not eject PRIMERGY Startup Disc while ServerStart is running. If the PRIMERGY Startup Disc is ejected and inserted again, ServerStart starts up in multiple windows, and settings you have made may be lost.

■ Exiting ServerStart

After operation in the expert mode, exiting ServerStart restarts the system. Remove discs from the floppy disk and CD/DVD drives and click [OK]. When the display on the screen disappears, turn off the system.

■ License for use of system for ServerStart

"License for Use of System for ServerStart" linked from the ServerStart startup window is a license for use of Windows PE contained in ServerStart of the PRIMERGY Startup Disc. Windows PE for starting up ServerStart can be only used for installing Windows Server 2008, Windows Server 2003 R2 and Windows Server 2003, provided under a separate legal license.

■ Display of onboard LAN

Display of an onboard LAN on your OS is as below when OS installation performs with ServerStart.

table: Display of Onboard LAN

LAN Port	Property on My Network	LAN Device Name
Onboard LAN	Local Area Connection	BroadcomNetXtreme Gigabit Ethernet

■ Adapter numbers

For ServerStart, onboard multiple LAN adapters (network adapter) may be configured on OS installation wizard.
To configure multiple LAN cards, select the adapter numbers in order of Adapter 1 and Adapter 2, and enter settings for each adapter. Note that the order of adapter numbers is not necessarily the same as the order of slots for the installed LAN adapters. This means that the setting for Adapter 1 is not always applied to the onboard LAN. After installing the OS, check the LAN adapters to make sure that they are configured as intended.

■ Setting up the printer

ServerStart does not support setup of printers. Perform installation after setup is completed.

2.3.4 Automatic Driver Installation with ServerStart

ServerStart supports automatic driver installation for the following expansion cards.

table: Automatic Driver Installation

Onboard controller/Card type	Product ID	Bus
Onboard FDD/IDE	-	-
Onboard LAN	-	PCI-E
Onboard VGA	-	PCI
SAS RAID Ctrl	PG-248G2L/PG-248CL/ PG-244CL	PCI-E
SAS Ctrl	PG-228BL	PCI-E
Eth. Ctrl 1000-BASE-SX Fibre LC lp	PG-1882L	PCI-X
Eth. Ctrl 1000-BASE-T Cu lp	PG-1892L	PCI-X
Eth. Ctrl 1x1Gbit PCI 1000-BASE-T lp	PG-1853L	PCI-X
Eth. Ctrl 2x1Gbit PCI-X 1000-BASE-T lp	PG-1863L	PCI-X
Eth. Ctrl 1x1Gbit PCI-E 1000-BASE-T lp	PG-289L	PCI-E
Eth. Ctrl 1x1Gbit PCI-E 1000BASE-SX lp	PG-288L	PCI-E
Eth. Ctrl 2x1Gbit PCI-E 1000-BASE-T lp	PG-2861L	PCI-E
SCSI Ctrl U320 lp	PG-2281L	PCI-E
Fibre Channel Controller	PG-FC202	PCI-E

Chapter 3

OS Installation

This chapter explains how to install the OS in the server using ServerStart.

3.1 Quick Installation Mode

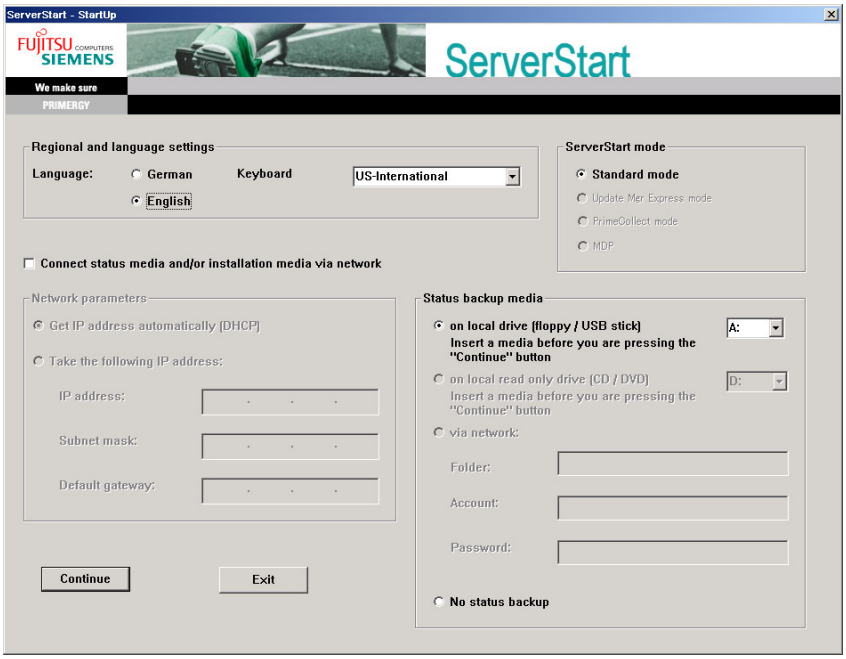
In this quick installation mode, the OS is installed after configuring minimum required settings. To install the OS quickly and easily, use the quick installation mode.

IMPORTANT

- Confirm that the USB floppy disk drive is connected before turning on the server power.
- When installing Windows Server 2008 in Quick installation mode, full installation is performed.
- When installing Windows Server 2008 (64-bit), and when saving the configuration file to a floppy disk, the boot priority must be changed using the BIOS Setup Utility before ServerStart startup. For the procedure for changing the boot priority, refer to "■ When installing Windows Server 2008 (64-bit) using ServerStart" (→p.42)

1 Turn on the server and insert PRIMERGY Startup Disc immediately.

ServerStart starts up. The select-media window for the configuration file appears.

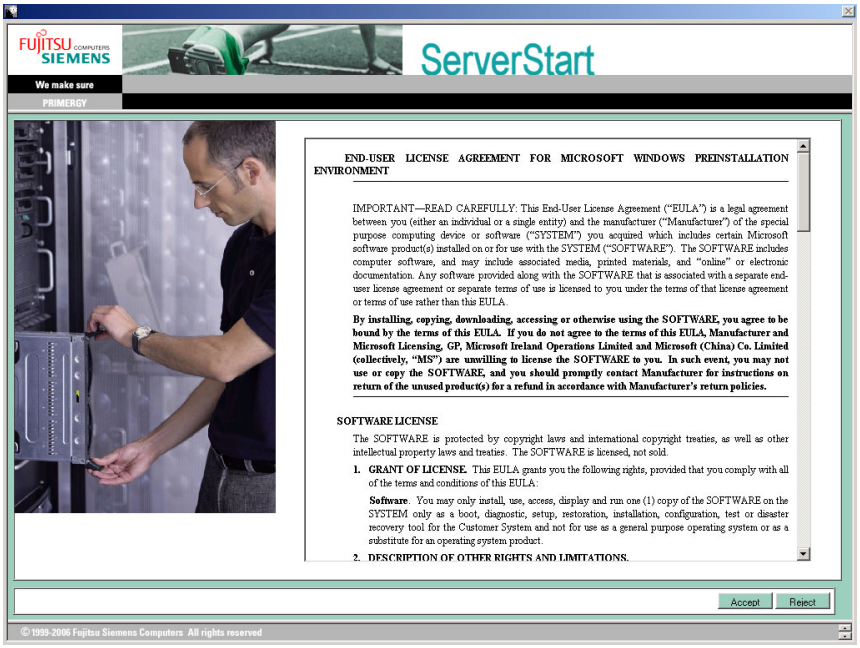


2 Insert the ServerStart floppy disk supplied with the server. Make sure that "on local drive (floppy/USB stick)" and "A:" are selected and click [Continue].

POINT

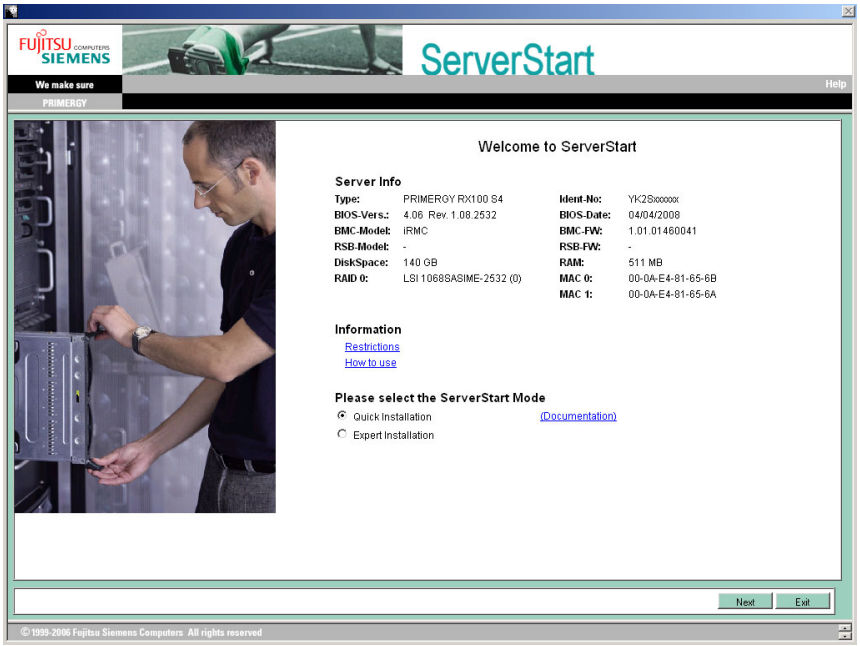
- Set the ServerStart floppy disk in the write-enabled state.
- When installing the OS not using the ServerStart floppy disk, select [RAM disk] and click [Create].

The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on hardware configuration, this process may take a few minutes. After completion, the license agreement window appears.



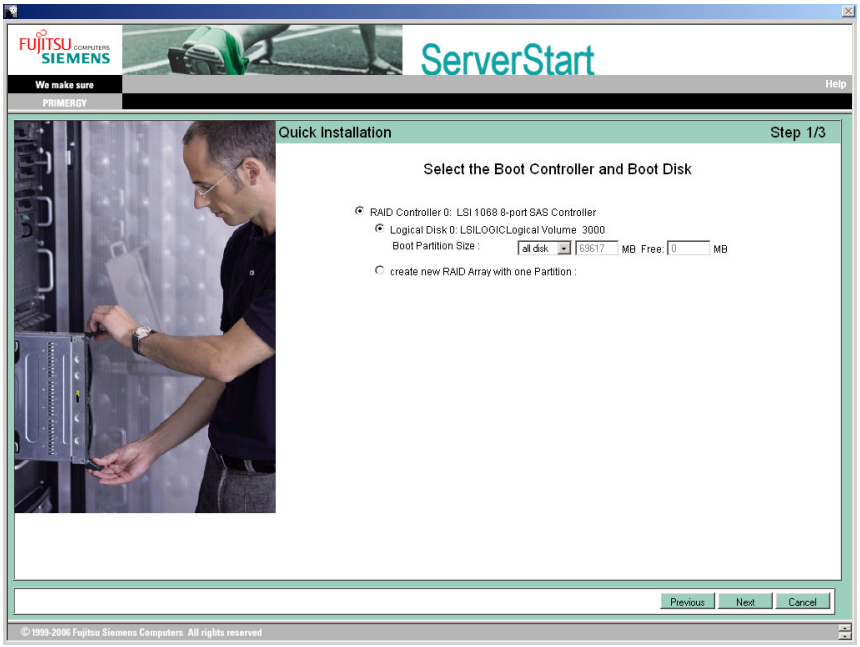
3 Click [Accept].

The [Welcome to ServerStart] window appears.



4 Select [Quick Installation (Windows only)] and click [Next].

The [Select the Boot Controller and Boot Disk] window appears.



5 Set configuration of the RAID and disks and click [Next].

To install the OS while maintaining the established RAID environment

Select [Logical Disk 0] and specify partition size to be created.

One partition can be created. Select [Logical Disk 0] even if the RAID is not required to be created.

To configure RAID

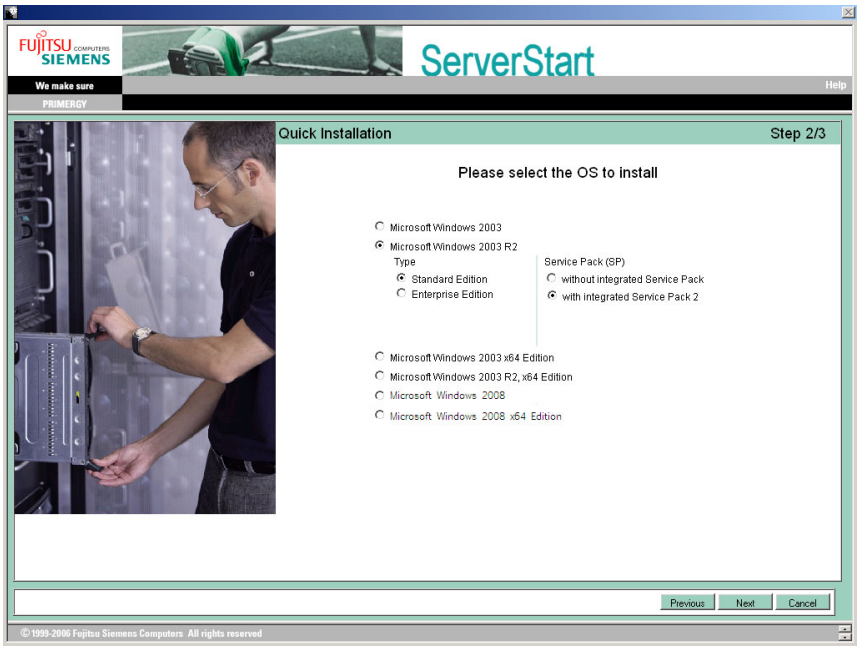
Select [create new RAID array with one partition] and specify the RAID level to be configured and the size of the partition.

All existing RAID will be deleted. Also, only one partition can be created.

POINT

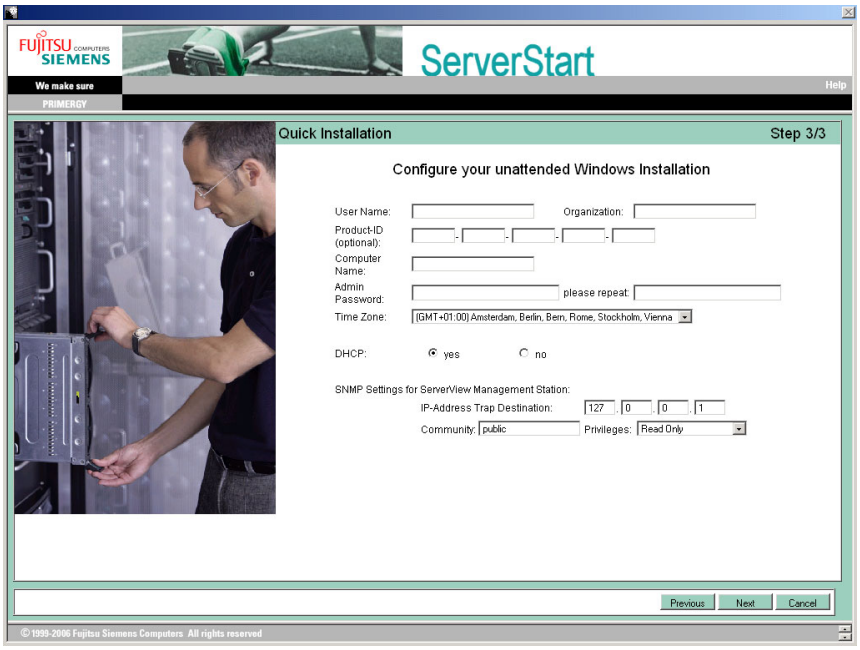
- When [Auto] is selected, the RAID is configured with the following levels, depending on the number of the installed disk units.
  - When two hard disk units are installed: RAID1
  - When three hard disk units are installed: RAID5
  - When more than three hard disk units are installed: RAID5 with hot spare function
- The configurations of the created partitions are as follows.
  - Volume label: system
  - File system: NTFS
  - Partition configuration: Boot/OS

The [Please select the OS to install] window appears.



6 Select the OS to be installed and click [Next].

The [Configure your unattended Windows Installation] window appears.



7 Set the items and click [Next].

The [Summary] window appears.

8 Confirm the settings and click [Start Installation].

9 Click [Start now].

Installation starts.

If a message prompts you to insert Array Controller Document & Tool CD

Insert the Array Controller Document & Tool CD and click [OK].

If a message prompts you to insert Service Pack CD-ROM

Insert the Service Pack CD-ROM and click [OK].

POINT

- When selecting the OS with Windows Server 2003 R2 Service Pack 2 applied, do not insert the CD-ROM, click [Cancel], and go to the next Step.

10 When a message prompts you to insert the OS CD/DVD, insert the CD/DVD and click [OK].

For Windows Server 2008

1. Insert the OS CD/DVD (Installation disc).

   Copying files starts.

   After files are copied, a message prompts you to eject the CD/DVD and floppy disk.

POINT

- For Windows Server 2008 (64-bit), a message appears and prompts you to insert the PRIMERGY Startup Disc again. Insert PRIMERGY Startup Disc. After files are copied, a message prompts you to eject the CD/DVD.

For Windows Server 2003 / Windows Server 2003 x64

1. Insert the OS CD/DVD (Installation disc).

   The license agreement window appears.

2. Click [Accept].

   After files are copied, a message prompts you to eject the CD/DVD and floppy disk.

For Windows Server 2003 R2 / Windows Server 2003 R2 x64

1. Insert the OS CD/DVD (Installation disc) Disc 1.

   The license agreement window appears.

2. Click [Accept].

   After files are copied, a message prompts you to insert the Disc 2.

3. Insert the OS CD/DVD (Installation disc) Disc 2.

   After files are copied, a message prompts you to eject the CD/DVD and floppy disk.

11 Eject the CD/DVD and floppy disk and click [OK].

IMPORTANT

- For Windows Server 2008 (64-bit), do not eject the floppy disk. Doing so stops automatic installation.

The system is restarted.

The system continues the installation operation after restart.

Setup of OS GUI and installation of LAN utility and Active Directory are performed automatically.

12 When a confirmation message to restart appears, click [Restart].

The system restarts and installs high reliability tools.

POINT

- Thus the Command Prompt windows may appear and disappear during installation of ServerView, the installation process is properly proceeding.

13 Restart the system.

For Windows Server 2008

The system automatically restarts when a message notifies completion of installation.
After restarting, enter the set password to login.

For Windows Server 2003

Press the [Enter] key when a message notifies completion of installation.
Click [Start] – [Shutdown] to restart the system.
After restarting, enter the set password to login.

14 Perform the settings for the RAID management tool (ServerView RAID).

For the setting procedures, refer to the manuals in Array Controller Document & Tool CD.

- Settings of an array administrator account
  The Windows user account is required when using ServerView RAID. Create a group named "raid-adm", and an account with any name for an array administrator within the group "raid-adm".
- Setting the HDD check scheduler
  When using the SAS RAID Ctrl (MegaRAID SAS), change the settings for the HDD check scheduler according to the operation that is required. It is set to 12:00 everyday as default.
- Configuration of Battery Recalibration Scheduler
  When using a SAS RAID Ctrl (MegaRAID SAS) together with a battery backup unit, change the settings of Battery Recalibration Scheduler according to the operation that is required. The default setting is 11:00 on the first of every month.

15 Perform settings for ServerView.

Refer to "2.4 Checking after Installation" in "ServerView User's Guide" to perform the necessary settings.

The server setup and OS installation have been completed.
Refer to "Chapter 4 Operations after OS Installation" (→p.73) and perform necessary procedures before starting server operations.

3.2 Expert Mode

In the expert mode, start up Disk Manager, format the installation partition, and install the OS. Use this mode only when you want to perform installation while maintaining the existing partitions.

IMPORTANT

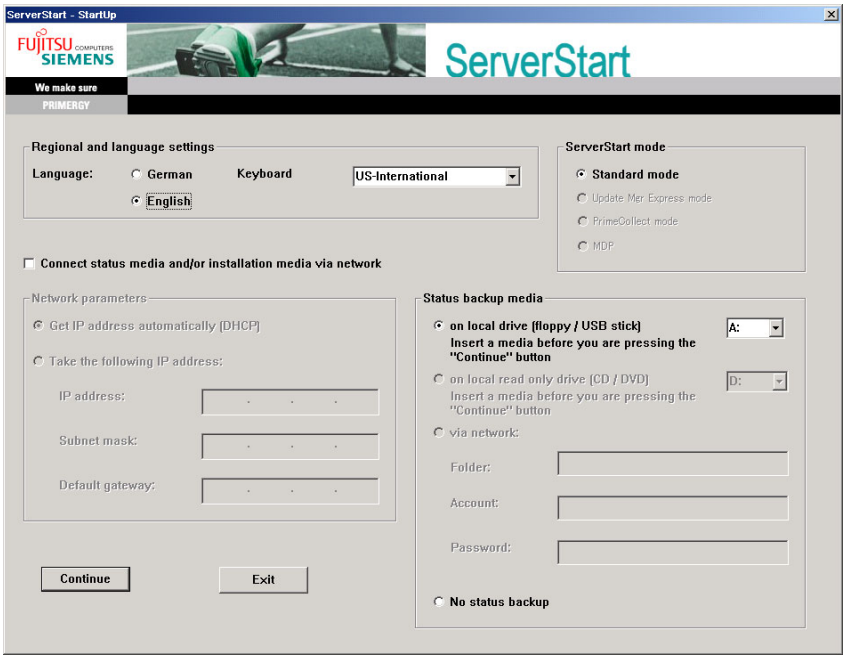
- Windows Server 2008 cannot be installed in Expert mode.
- Confirm that the USB floppy disk drive is connected before turning on the server power.

3.2.1 Starting Up the Expert Mode

Start up the expert mode.

1 Turn on the server and insert PRIMERGY Startup Disc immediately.

ServerStart starts up. The select-media window for the configuration file appears.

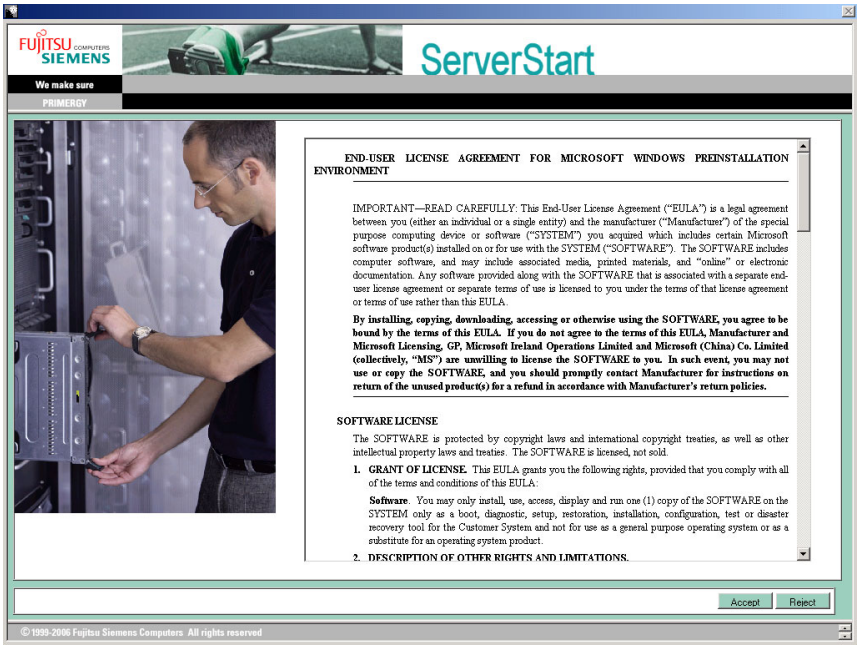


2 Set the ServerStart floppy disk, provided with the server, and ensure that "Removable media" and "A:" are selected. Click [Create].

POINT

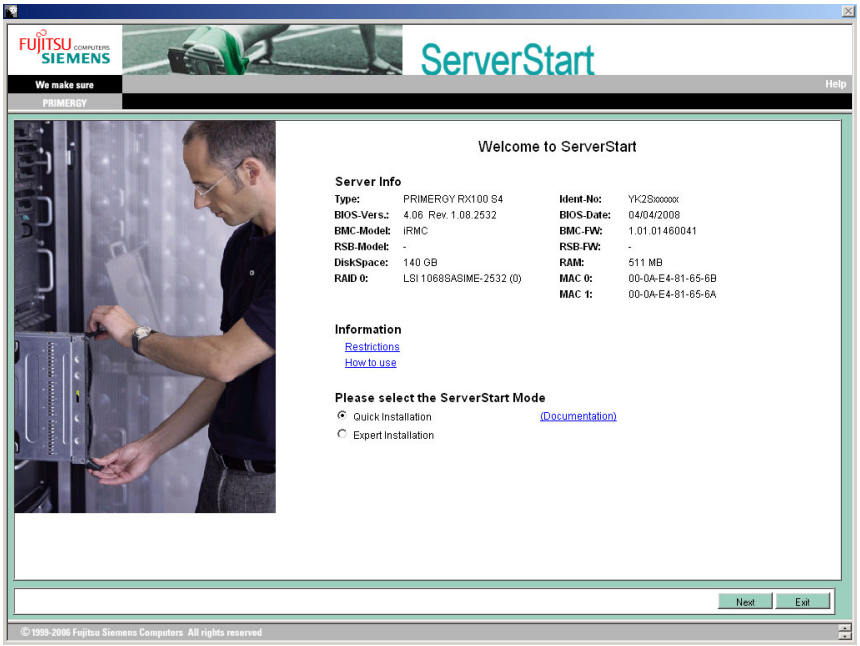
- Insert the ServerStart floppy disk with its write-protect disabled.
- When installing the OS not using the ServerStart floppy disk, select [RAM disk] and click [Create].

The [Initialization of ServerStart core running] window appears and the ServerStart initialization process starts. Depending on hardware configuration, this process may take a few minutes. After completion, the license agreement window appears.



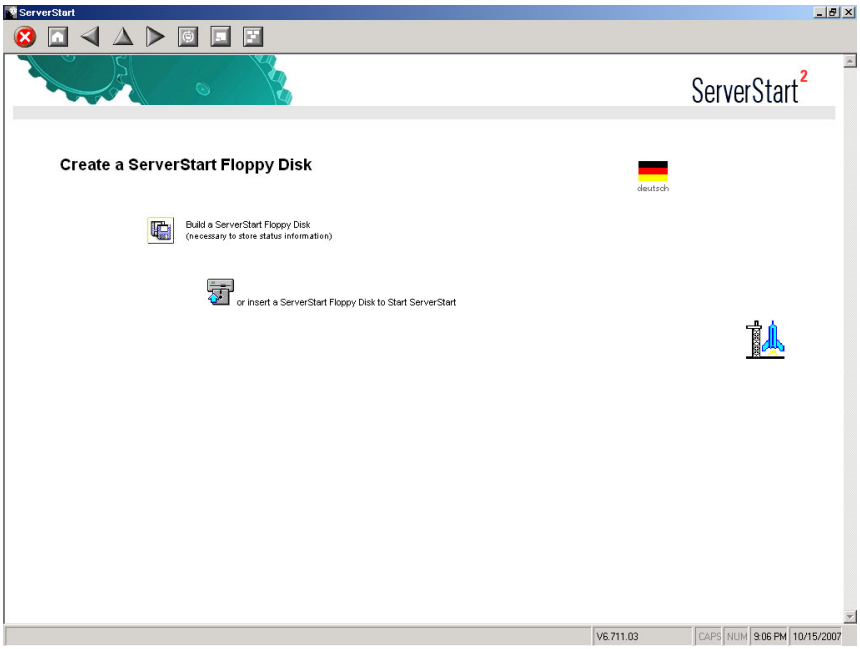
3 Click [Accept].

The [Welcome to ServerStart] window appears.



4 Select [Expert Installation] and click [Next].

The [Create a ServerStart Floppy Disk] window appears.



5 Click [Build a ServerStart Floppy Disk].

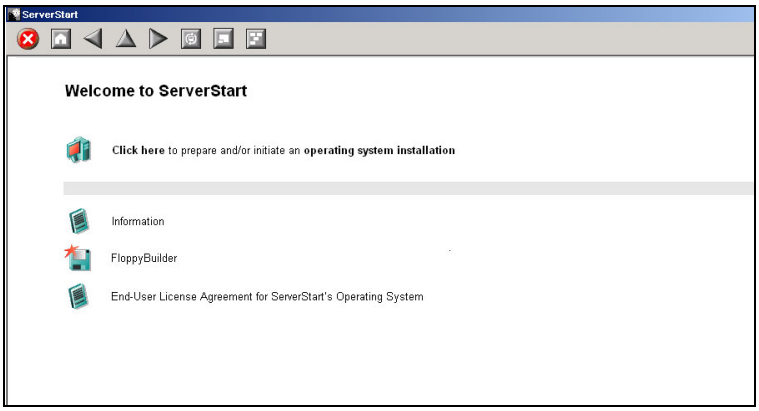
Creation of a ServerStart floppy disk starts. When the creation is completed, the "Floppy disk has been created." message appears.

6 Click [OK].

The [Please Select your Keyboard] window appears.

7 Select your keyboard language from the drop-down list and click [OK].

The subsequent start procedure may take several minutes.
The [Welcome to ServerStart] window appears.



8 Click [Click here to prepare and/or initiate an operating system installation].

The [Select the operating system to be installed] window appears.
Click [Special Hints on Operating System Installation] and observe them carefully. Important information such as limitations on configuration of hard disk units is described.

9 Click [MS Windows Operating Systems].

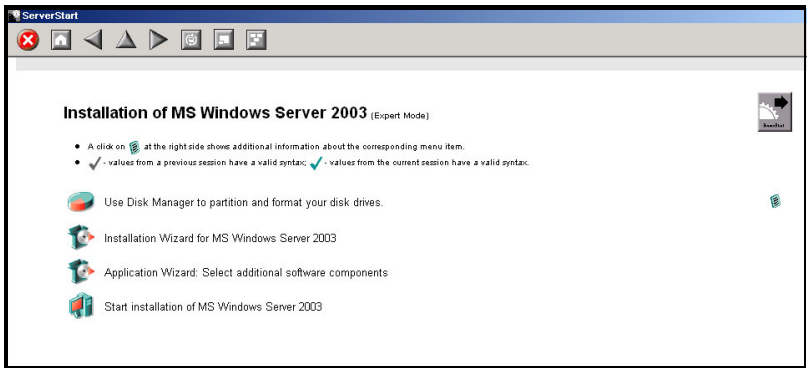
The [Microsoft Windows Operating System Installation] window appears.

10 Click [Install MS Windows Server 2003 or MS Small Business Server (SBS) 2003].

The [Installation of MS Windows Server 2003] window appears.

11 Click [Install MS (OS) interactively (expertise required)].

The expert mode starts.



Start up the configuration tools to set items. Exiting a tool returns to the display to the expert mode window.

IMPORTANT

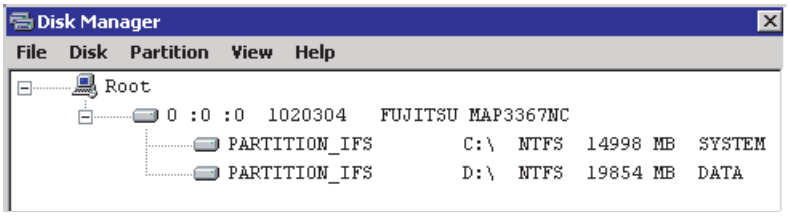
- Make sure to open the menu of each wizard and confirm the settings.

3.2.2 Disk Manager

Start up Disk Manager and format the installation partition.

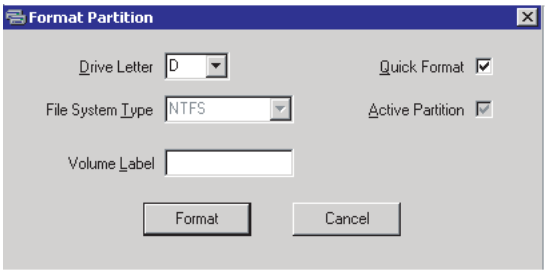
1 Click [Use Disk Manager to partition and format your disk drives].

Disk Manager starts up.



2 Format the OS installation partition. Select the OS installation partition and click the [Partition] menu – [Format].

The [Format Partition] window appears.



IMPORTANT

- Be sure to set the active partition on drive C.
- For Expert mode, the OS can only be installed in the C drive.

3 Set items and click [Format].

The partition is formatted.

4 When the formatting is completed, click the [File] menu – [Exit].

Disk Manager closes and the display returns to the expert mode window.

3.2.3 OS Installation Wizard

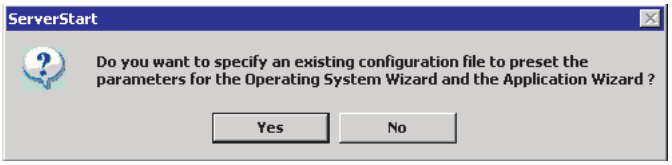
Set computer information, user information, and the network protocol.
ServerStart can configure multiple network patterns. When configuring a domain controller, refer to "Using ServerStart to Configure the Network".

POINT

- The setup windows vary depending on the OS to be installed. For example, operation on Server 2003 R2 is given below. Server 2003 R2 is corresponding to your OS to be installed.

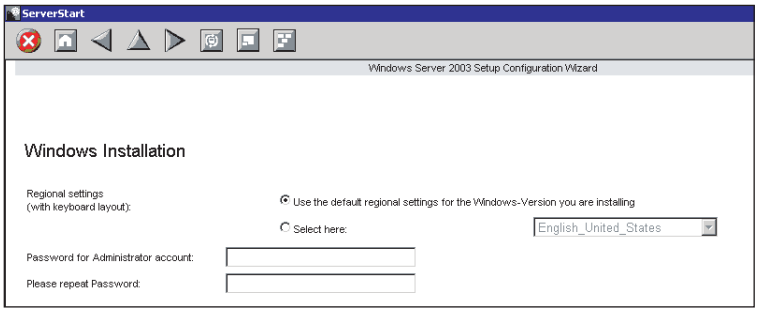
1 Click [Installation Wizard for MS Windows Server 2003].

A message prompts you to specify the configuration file.



2 Click [No].

The [Windows Installation] window appears.

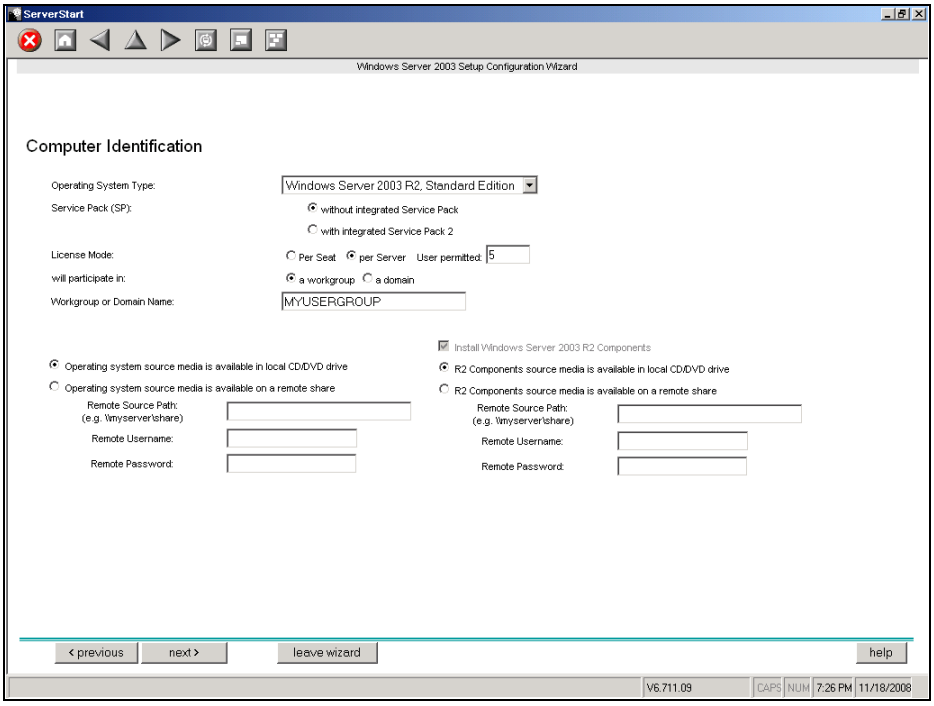


3 Enter the password in [Password for Administrator account] and [Please repeat Password] and click [Next].

POINT

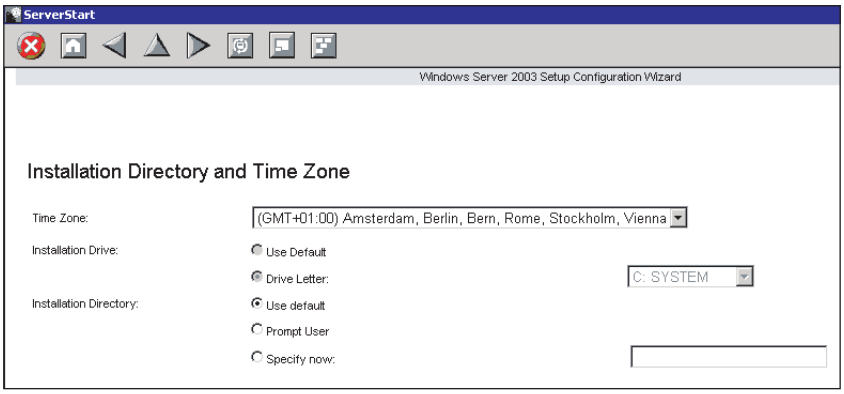
- If the passwords of [Password for Administrator account] and [Please repeat Password] are not identical, an error message occurs. Enter the password correctly.

The [Computer Identification] window appears.



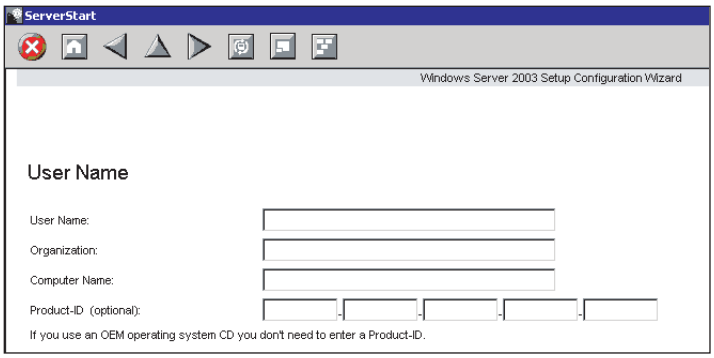
4 Set items and click [next].

The [Installation Directory and Time Zone] window appears.



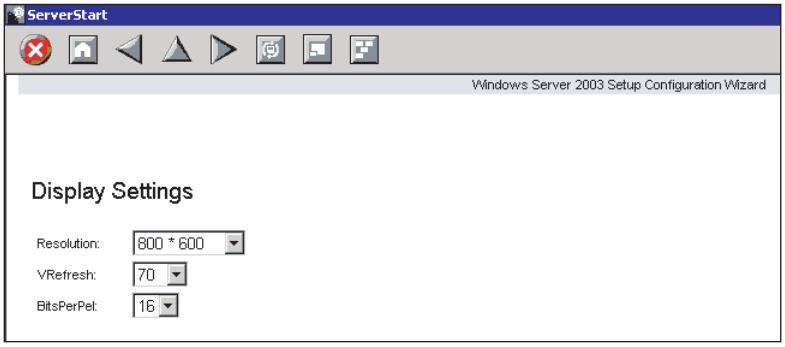
5 Set items and click [next].

The [User Name] window appears.



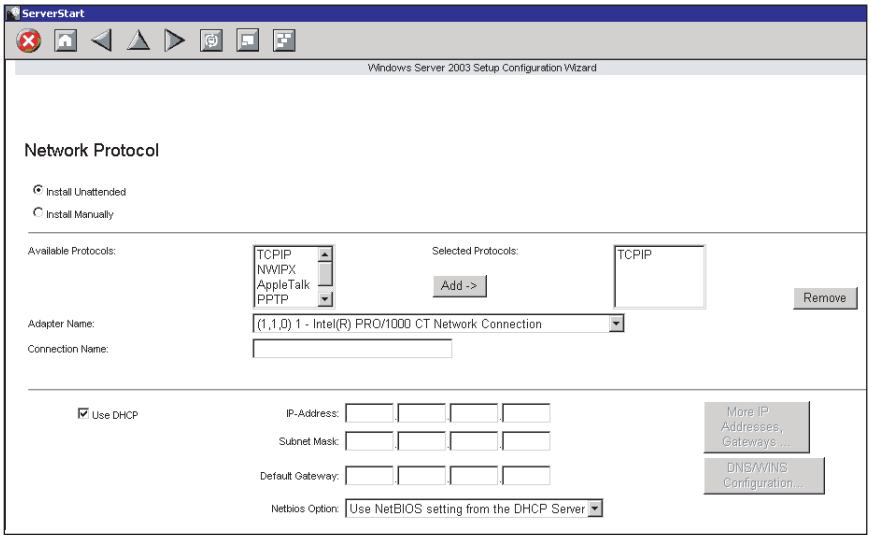
6 Set items and click [next].

The [Display Settings] window appears.



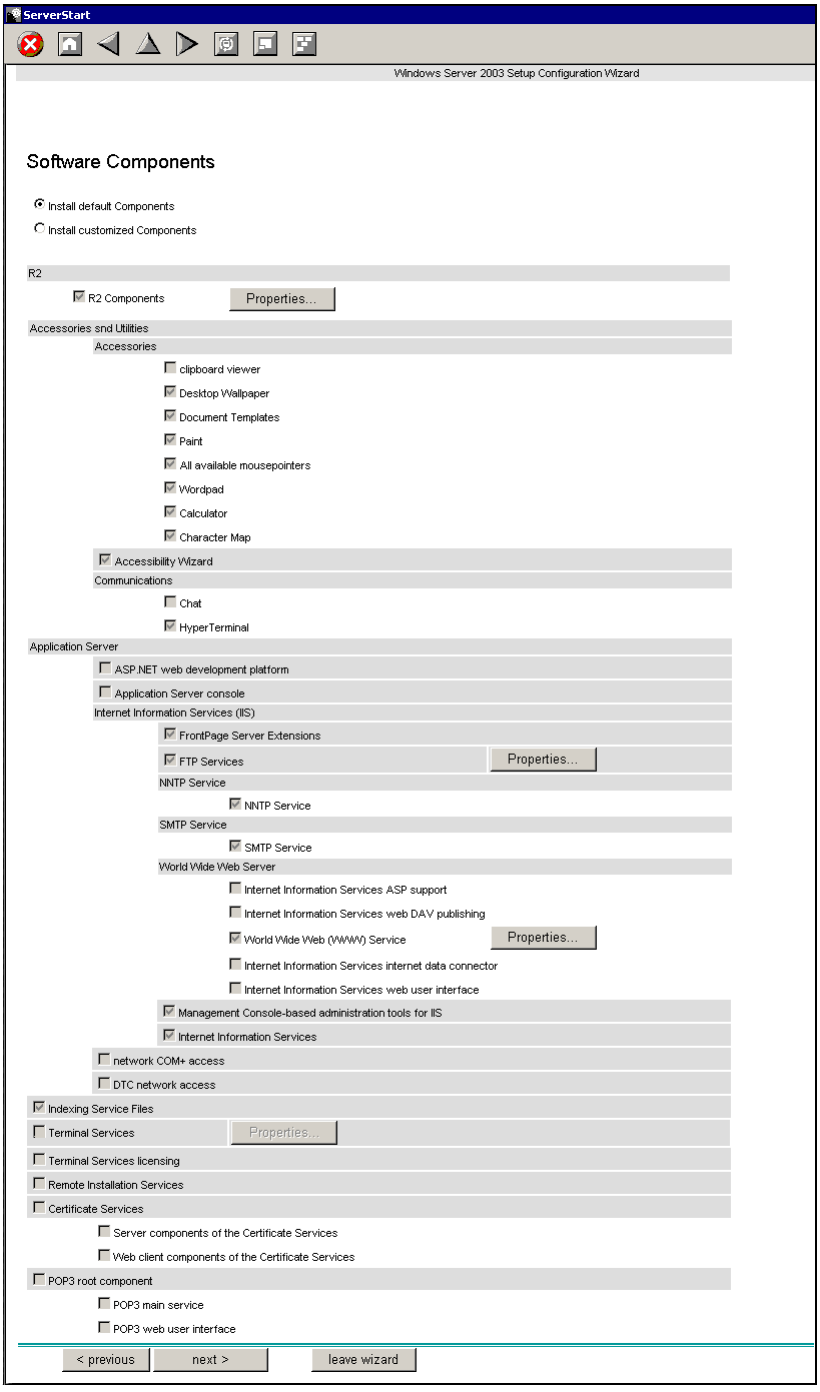
7 Set items and click [next].

The [Network Protocol] window appears.



8 Set items and click [next].

The [Software Components] window appears.

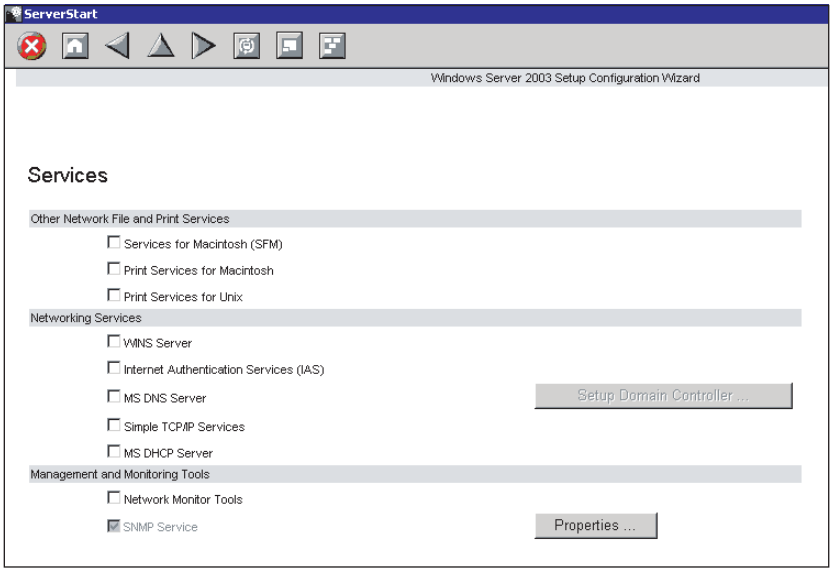


IMPORTANT

- If Windows Server 2003 R2 is selected at the Computer Identification, R2 components are always copied to the hard disk. To install the components, click [Properties] and check t box of the components to be installed.

9 Set items and click [next].

The [Services] window appears.



POINT

- Simple Network Management Protocol is always installed. Click [Properties] to change the settings.

10 Set items and click [leave wizard].

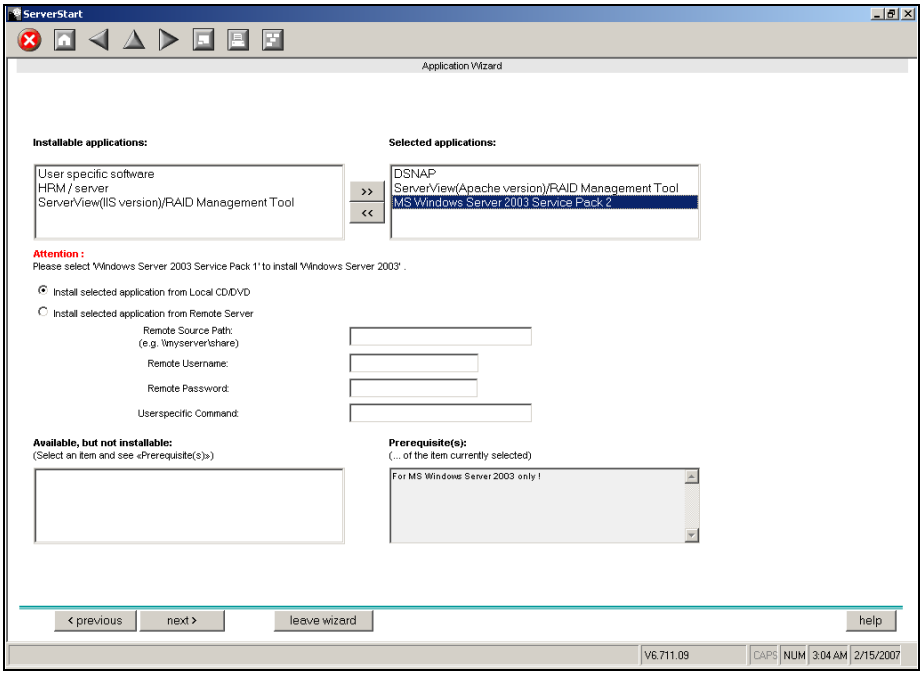
The display returns to the expert mode window.

3.2.4 Application Wizard

Set configurations for installation of supplied applications such as high reliability tools. Open those windows and confirm the settings carefully.

1 Click [Application Wizard: Select additional software components].

The application wizard appears.



2 From the list in [Installable applications], select application software to be installed and click [>>].

Set all applications to be installed on the [Selected applications] list.

POINT

- Although the selection can be released in the expert mode, it may take a long time to restore the system when errors occur without the management tools. Be sure to install these tools.
  - DSNAP
  - RAID Management Tool
  - ServerView Agent
  - ServerView Console (Apache)
  - ServerView Console (IIS)
- Only Service Pack 2 is available to perform automatic installation with ServerStart.

3 Click [leave wizard].

The application wizard closes.

3.2.5 Starting OS Installation

Install the OS to the server.

IMPORTANT

Notes on the Installation

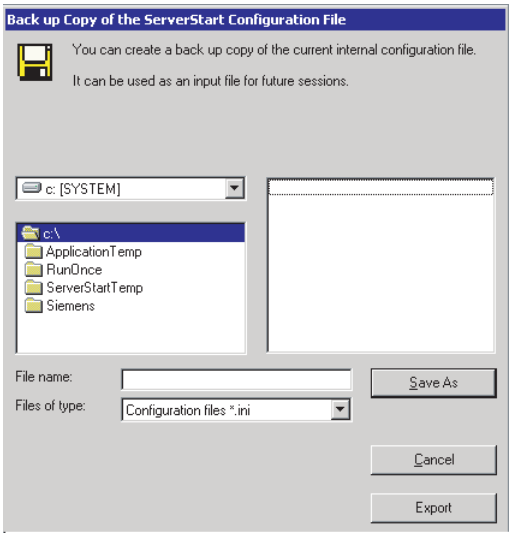
- When the installation partition is not empty, a confirmation message appears. Unless otherwise considered as problem, click [OK] to continue the installation procedure.
- If an incorrect setting (such as the CD key) is found during installation, an error window will appear. Enter the correct values in the window to continue the installation procedure. However, corrections made here are not reflected on the configuration file.

1 Click [Click here, to Start the Installation of (OS)].

A confirmation window asking whether you want to save the current settings appears.

2 Click [Yes].

The following window appears.



3 Enter the file name and click [Save As].

Installation starts automatically.

If a message prompts you to insert Array Controller Document & Tool CD

Insert the Array Controller Document & Tool CD and click [OK].

If a message prompts you to insert the Service Pack CD-ROM

Insert the Service Pack CD-ROM and click [OK].

If Service Pack is not selected, the message is not displayed.

4 When a message prompts you to insert the OS CD/DVD, insert the CD/DVD and click [OK].

For Windows Server 2003 / Windows Server 2003 x64

1. Insert the OS CD/DVD (Installation disc).
   The license agreement window appears.
2. Click [I agree].
   After files are copied, a message prompts you to eject the CD/DVD and floppy disk.

For Windows Server 2003 R2 / Windows Server 2003 R2 x64

1. Insert the OS CD/DVD (Installation disc) Disc 1.
   The license agreement window appears.
2. Click [I agree].
   After files are copied, a message prompts you to insert the Disc 2.
3. Insert the Disc 2 of OS CD/DVD (Installation disc).
   After files are copied, a message prompts you to eject the CD/DVD and floppy disk.

5 Eject the CD/DVD and floppy disk and click [OK].

The system is restarted. The system continues the installation operation after restart.
Setup of OS GUI and installation of LAN utility, Service Pack, and Active Directory are performed automatically.

6 When a confirmation message to restart appears, click [Restart].

The system restarts and installs high reliability tools.

POINT

- Thus the Command Prompt windows may appear and disappear during installation of ServerView, the installation process is properly proceeding.

7 Press the [Enter] key when a message notifies completion of installation.

8 Restart the system.

Click [Start] – [Shutdown] to restart the system.
After restarting, enter the set password to login.

9 Perform the settings for the RAID management tool (ServerView RAID).

For the setting procedures, refer to the manuals in Array Controller Document & Tool CD.

- Settings of an array administrator account
  The Windows user account is required when using ServerView RAID. Create a group named "raid-adm", and an account with any name for an array administrator within the group "raid-adm".
- Setting the HDD check scheduler
  When using the SAS RAID Ctrl (MegaRAID SAS), change the settings for the HDD check scheduler according to the operation that is required. It is set to 12:00 everyday as default.
- Configuration of Battery Recalibration Scheduler
  When using a SAS RAID Ctrl (MegaRAID SAS) together with a battery backup unit, change the settings of Battery Recalibration Scheduler according to the operation that is required. The default setting is 11:00 on the first of every month.

10 Perform settings for ServerView.

Refer to "2.4 Checking after Installation" in "ServerView User's Guide" to perform the necessary settings.

The server setup and OS installation have been completed. Refer to "Chapter 4 Operations after OS Installation" (→p.73) and perform necessary procedures before starting server operations.

Chapter 4

Operations after OS Installation

4

This chapter explains the operations to be performed after OS installation. Be sure to perform these operations before operating the server.

4.1 Memory Dump/Paging File Setting

Before starting operating this server, configure the setting for obtaining memory dump.

- **Memory dump**

Debugging information, when memory dump has been set, will be automatically saved in case that a STOP error (fatal system error) occurs in the system. Error causes may be apparent by analyzing the saved memory dump.
When a large-capacity memory is installed, care shall be exercised to configure the settings of the memory dump file. The settings for obtaining memory dump should be configured after installing the files to be used for operations (OS, applications, etc.).

4.1.1 How to Obtain Memory Dump

Check the following settings before starting configuration to obtain memory dump.

■ Checking hard disk free space

To obtain memory dump, sufficient hard disk capacity is required for creating paging files and memory dump files. The obtainable dump types and required hard disk capacity are as follows:

- **Complete memory (full) dump (recommended)**

When the system unexpectedly stops, contents of the whole system memory are recorded. The file is stored in the directory displayed in the [Dump file] box.

- Paging file: Installed physical memory + 11MB (Recommended: Installed physical memory × 1.5)
- Memory dump file: Equivalent to installed physical memory

IMPORTANT

▸ When collecting a complete memory dump on a computer where there is 2GB or more of memory installed, use the registry editor to set the registry as follows.

```
HKEY_LOCAL_MACHINE¥SYSTEM¥CurrentControlSet¥Control¥CrashControl
CrashDumpEnabled = 1 (Complete Memory Dump)
```

For details, refer to Microsoft information (http://support.microsoft.com/kb/274598/).

● Kernel memory dump

Information of only kernel memory space is recorded. The file is stored in the directory displayed in the [Dump file] box. Capacity required for kernel memory dump is as follows:

- Paging file: Depending on installed physical memory amount
  For memory of 256 to 1,373MB - Installed physical memory × 1.5
  For memory of 1,374MB or more - 32-bit system: 2GB + 16MB, 64-bit system: Installed physical memory + 128MB
- Memory dump file: Depending on the kernel-mode address space being used during STOP

● Small memory dump

Minimum information to identify a problem is recorded. When this option is selected, a new file is created each time the system unexpectedly stops.
Those file histories are stored in the directory displayed in [Small dump directory].

- Paging file: Minimum 2MB
- Memory dump file: 64KB or 128KB

■ Memory dump file setting

Set up the memory dump file according to the following procedures:

1 Log on to the server with the administrator account.

2 Check free space of the drive where the memory dump file is to be stored.

Check the required free space according to "■ Checking hard disk free space" (→p.74).

If the drive has insufficient free space, refer to "■ Cannot collect the memory dump" (→p.224).

3 Display the [System Properties] window.

For Windows Server 2008

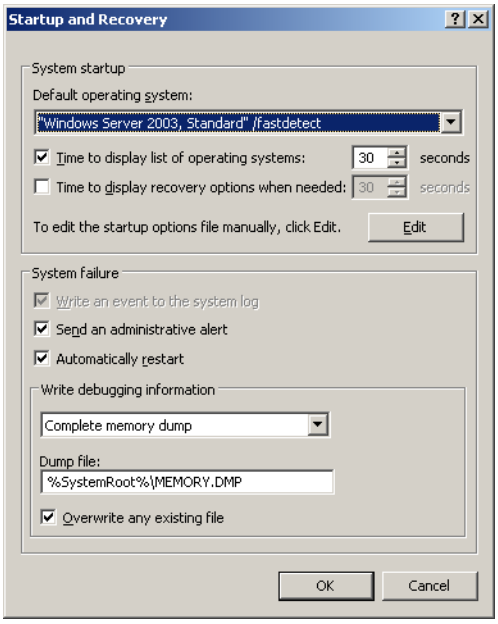
1. Click [Start] – [Control Panel].
   Control Panel appears.
2. Double-click the [System] icon.
   System Control Panel appears.
3. Select [Advanced system settings] from the tasks.
   The [System Properties] window appears.

For Windows Server 2003

1. Click [Start] – [Control Panel] – [System].
   The [System Properties] window appears.

4 Click the [Advanced] tab and click [Settings] in [Startup and Recovery].

The [Startup and Recovery] window appears.



5 Set as follows:

1. In the [Write debugging information] section, select the memory dump file type.
   - Complete memory dump (Recommended)
     The whole system memory information is recorded to the memory dump file.
   - Kernel memory dump
     Only kernel memory is recorded to the memory dump file.
   - Small memory dump (64KB)
     Minimum information is recorded to the memory dump file.
     Each time a fatal error occurs, a new file is created in the directory specified in [Small dump directory].
2. In [Dump file] or [Small dump directory], specify the directory to save the memory dump file, with its full path.
   For kernel memory dump or complete memory dump, when check the box of the [Overwrite any existing file], debugging information is overwritten to the specified file every time.

6 Click [OK] to close the [Startup and Recovery] window.

7 Click [OK] to close the [System Properties] window.

8 Restart the system.

The setting is enabled after the system restarts.

■ Paging file setting

Set up the paging file according to the following procedures:

1 Log on to the server with the administrator account.

2 Check free space of the drive where the system has been installed.

Check the required free space according to "■ Checking hard disk free space" (→p.74).

If the drive has insufficient free space, refer to "■ Cannot collect the memory dump" (→p.224).

3 Display the [System Properties] window.

For Windows Server 2008

1. Click [Start] – [Control Panel].
   Control Panel appears.
2. Double-click the [System] icon.
   System Control Panel appears.
3. Select [Advanced system settings] from the tasks.
   The [System Properties] window appears.

For Windows Server 2003

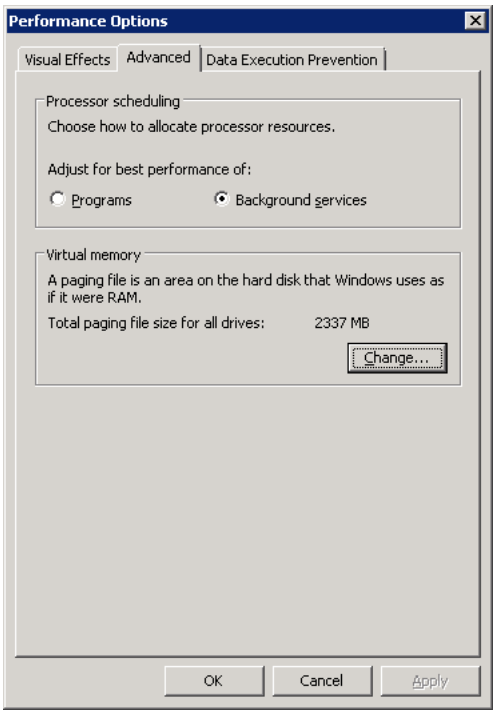
1. Click [Start] – [Control Panel] – [System].
   The [System Properties] window appears.

4 Click the [Advanced] tab and click [Settings] in [Performance].

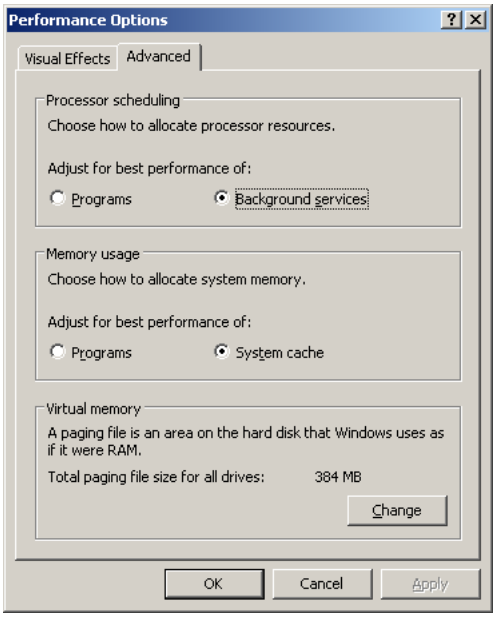
The [Performance Options] window appears.

5 Click the [Advanced] tab.

For Windows Server 2008



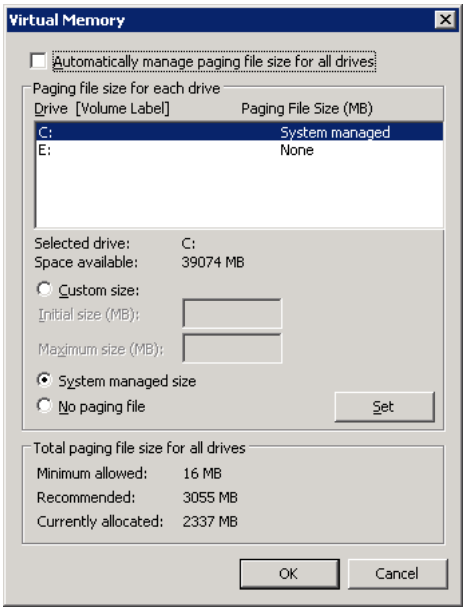
For Windows Server 2003



6 Click [Change] in the [Virtual memory] section.

The [Virtual Memory] window appears.

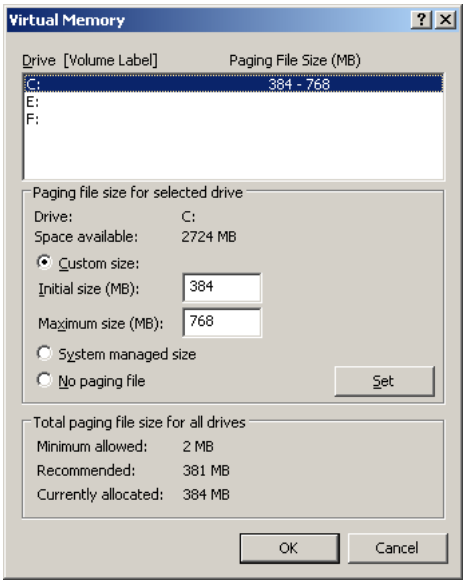
For Windows Server 2008



IMPORTANT

- If [Automatically manage paging file size for all drivers] is checked, uncheck it.

For Windows Server 2003



7 Select the drive where the paging file is to be created.

In [Drive], select the drive where the system is installed.

The selected drive is displayed in [Drive] in [Paging file size for selected drive].

8 Select [Custom size] and enter a value in [Initial size].

The value depends on the type of the set dump file.

Set a value larger than the value shown in [Recommended] in [Total paging file size for all drives].

IMPORTANT

- When a smaller value is specified for the paging file size, performance may be affected. For maximum system efficiency, be sure to set [Initial size] with a value larger than the [Recommended] size described in [Total paging file size for all drives]. The recommended size is total memory installed in the system x 1.5. However, if a program occupies a large part of memory is regularly used, set a larger size as required.

9 Enter a value in [Maximum size].

Set a value larger than the [Initial size].

10 Save the settings.

Click [Set] in the [Paging file size for selected drive] section.

The settings are saved, and the value specified is displayed in [Paging File Size] of [Drive].

11 Click [OK] to close the [Virtual Memory] window.

12 Click [OK] to close the [Performance Options] window.

13 Click [OK] to close the [System Properties] window.

14 Restart the system.

The setting is enabled after the system is restarted.

■ Rebooting after OS dump setting

Rebooting may not be executed when the server fails eve if rebooting has been set after obtaining dumping.

Immediate provision may be required when the server fails. However, configure the settings of rebooting with the Watchdog, when continuous operation is required. For details and configuration procedures for the software, the Watchdog, refer to "3.4 Serious Error Handling (ASR)" in "ServerView User's Guide".

4.2 Creating Backup Data for System Recovery

After OS installation is complete, create backup data for system recovery, which enables the system to be recovered if an error occurred.

POINT

- After OS installation or changing the system configuration, make sure to perform this procedure to create backup data.

IMPORTANT

- Connect the USB floppy disk drive before turning on the server's power. For details, refer to "Appendix E Notes on Using External FDD (USB)" (→p.261).

4.2.1 Windows Server 2008

When installing Windows Server 2008, backup whole server configuration to media such as a shared folder or DVD.

POINT

Windows Server backup function

- For Windows Server 2008, backup and restoration of the whole system can be performed using the [Windows Server Backup] function.
  After installation, perform a full backup for the whole system configuration only once. Incremental backup can be specified to be automatically performed to only store changed data. Set or operate it according to the operation configuration.

IMPORTANT

- Windows Server backup does not support a tape device. When using a tape device, use software for tape backup.
- If setting up Windows Server 2008 Server Core, backup via the MMC console and Windows PowerShell are not supported. Only command line (Wbadmin command) backup is supported.

● Installing a backup component

In Windows Server 2008 default settings, backup components are not installed. Install it in advance.

1. Click [Start] – [All Programs] – [Administrative Tools] – [Server Manager].
   Server Manager starts.

2. Check [Windows Server Backup Features] in [Add Features] to install.

- **Creating backup data**

Perform backup for the whole server configuration according to the following procedure.

1. Click [Start] – [All Programs] – [Windows Server Backup].
2. Select [Backup Once] from the operation menu.
3. Select [Full server] in [Select backup configuration].
4. Select [Remote shared folder] in [Specify destination type].

IMPORTANT

- Specify a shared folder or DVD drive on a server other than the device's server as a backup destination.

5. Select the options as required, and start backup.
   When backup has completed, the status (succeeded or failed) is displayed in the message part of the [Windows Server Backup] window.

4.2.2 Windows Server 2003

When installing Windows Server 2003, create the Automated System Recovery (ASR) set. To create it, an unused formatted floppy disk and media to store the backup file are required.

POINT

- Only system information can be restored by using the Automated System Recovery (ASR) set that is created in this procedure. Data such as files created by customers are not included. Regular data backup using a backup device is recommended. For backup, refer to "8.5 Backup" (→p.234).

1. Click [Start] – [All Programs] – [Accessories] – [System Tool] – [Backup].
   The [Backup or Recovery Wizard] window appears.
2. Click [Next].
   The [Backup or Recovery] window appears.
3. Select [Create a backup of files and settings], and then click [Next].
   The [Items to Create Backups] window appears.
4. Select [All the information in this computer], and then click [Next].
   The [Backup Type, Destination and Name of the Backup File] window appears.
5. Enter a name and a destination for the backup file, and then click [Next].
   The [Backup or Recovery Wizard Complete] window appears.

6 Click [Finish].

Backup process starts.

7 If a message prompts you to insert a floppy disk, insert the floppy disk and click [OK].

Automated system recovery disk is created.

8 When the process is completed, a message appears. Eject the floppy disk according to the message and put a label on it.

Label example: Windows Automated System Recovery Disk: Backup.bkf, Created at 12:00 04/01/2008

9 Click [OK] to exit [Backup Utility].

10 Click [Close] to close the [Backup Progress] window.

An automated system recovery set has been created.

Store the automated system recovery set just created just in case.

4.3 Storing the System Configuration Information

Before starting operations and when changing the system configuration information, store the configuration information. By storing this information, the system can be recovered with the stored information in case of a system failure (such as when the baseboard fails).
Use Server Management Tools for storing and recovering the system configuration information.

IMPORTANT

- Since the system configuration information is significant in maintaining the server, be sure to store the configuration information after the following operations:
  - When the information is changed with the BIOS Setup Utility
  - When the hardware configuration of this server is changed (e.g. memory, hard disk unit, baseboard or expansion card is added/removed or changed)
  - When the Remote Management Controller information is changed
- As the stored system configuration information will be used for maintenance operation.

■ Cautions

- Confirm that the USB floppy disk drive is connected before turning on the server power.
- "Server Management Tools" disk is exclusively for this server. Do not use it on other systems. Otherwise, the systems may be damaged.
- Only the information that is configured with the BIOS Setup Utility and the configuration information of the Remote Management Controller can be stored/recovered. However, a user account for the Remote Management Controller and the license information of the Remote Management Controller Upgrade Kit cannot be stored.
- Make sure to perform this operation only when the server is started with the "Server Management Tools" disk. Do not run Server Management Tools on the server started from the hard disk or by the other floppy disk. Otherwise, the system may be damaged.
- Do not eject a floppy disk while the floppy disk access LED is on. Such an action may lead not only to corruption of the floppy disk data but also an unstable state of the system.
- If an error message appears while running Server Management Tools, respond to the message according to "■ Server Management Tools error messages" (→p.221).

■ Creating "Server Management Tools" disk

"Server Management Tools" disk is required to be created when stated as "blank" on the label of the "Server Management Tools" disk, supplied with the server. Create Server Management Tools by referring to "4.4 Creating Maintenance Tools and Driver Disks" (→p.88).

4.3.1 Storing the BIOS Information and the Remote Management Controller Information

Store the BIOS information and the Remote Management Controller information according to the following procedures.

IMPORTANT

- Confirm that the USB floppy disk drive is connected before turning on the server power.
- Configure settings in "7.2.4 Boot Options Submenu" (→p.188) to give the highest priority to the USB floppy disk drive.
- Before starting the operation, if the "OS Boot Monitoring" function of ServerView is enabled, disable it (it is disabled by default). If you start up the system while the "OS Boot Monitoring" function remains effective, the operation of the server may become unpredictable at such times as an abrupt power interruption or restart.
  If it is necessary to operate the server with the "OS Boot Monitoring" function enabled, enable the function after storing the BIOS/Remote Management Controller information. For details of ServerView, refer to "ServerView User's Guide".
- "Server Management Tools" disk is required to be created when stated as "blank" on the label of the "Server Management Tools" disk, supplied with the server. Create Server Management Tools by referring to "4.4 Creating Maintenance Tools and Driver Disks" (→p.88).

1 Insert the "Server Management Tools" disk and turn on the server.

The window for selecting a keyboard appears.

```
Please select:
   1 = JP Keyboard
   2 = US Keyboard
Your selection
```

2 Select a keyboard.

Select [1] for Japanese keyboard or select [2] for English keyboard. Japanese keyboard is selected by default.

3 When the DOS Prompt window appears, enter the following command and press the [Enter] key.

```
A:\ SMT>biossave.bat
```

IMPORTANT

- Do not input the file extension at the end of a file name.
- The file name is given as "cmosfile" when a file name is not input.

4 If the BIOS information or the Remote Management Controller information is stored successfully, the following message appears.

```
Success !
```

5 Confirm that the stored information files are created.

Enter the following command to display the stored information files which are created.

```
A:\SMT>dir
```

The BIOS information has been stored. The server can now be turned off safely.

4.3.2 Recovering the BIOS / Remote Management Information

If the information configured with the BIOS Setup Utility was deleted due to a drain of the built-in server battery, etc., restore the BIOS information according to the following procedures.

IMPORTANT

- Confirm that the USB floppy disk drive is connected before turning on the server power.
- Configure settings in "7.2.4 Boot Options Submenu" (→p.188) to give the highest priority to the USB floppy disk drive.
- Do not turn off the server while a program is running.
- Before starting the operation, check that the "OS Boot Monitoring" function of ServerView is disabled (it is disabled by default).
  If you start up the system while the "OS Boot Monitoring" function remains effective, the operation of the server may become unpredictable at such times as an abrupt power interruption or restart. If the server is operated with the "OS Boot Monitoring" function enabled, enable the function again before resuming operation. For details of ServerView, refer to "ServerView User's Guide".
- "Server Management Tools" disk is required to be created when stated as "blank" on the label of the "Server Management Tools" disk, supplied with the server. Create Server Management Tools by referring to "4.4 Creating Maintenance Tools and Driver Disks" (→p.88).

1 Insert the "Server Management Tools" disk and turn on the server.

The window for selecting a keyboard appears.

```
Please select:
   1 = JP Keyboard
   2 = US Keyboard
Your selection
```

2 Select a keyboard.

Select [1] for Japanese keyboard or select [2] for English keyboard. Japanese keyboard is selected by default.

3 When the DOS Prompt window appears, confirm that the BIOS stored information files are in the floppy disk.

Enter the following command to confirm that the stored information files are in the floppy disk.

```
A:\SMT>dir
```

4 Enter the following command and press the [Enter] key.

```
A:\SMT>biosrest.bat
```

IMPORTANT

- Do not input the file extension at the end of a file name.
- The file name is given as "cmosfile" when a file name is not input.

5 If the BIOS information is restored correctly, the following message appears.

```
Success !
```

6 The BIOS information will be enabled after the next system restart. Restart the server.

Perform Step 1 to display the DOS Prompt window. The restoration procedure has been completed. The server can now be turned off safely.

4.4 Creating Maintenance Tools and Driver Disks

This section explains how to create the server maintenance tools and driver disks with FloppyBuilder function of ServerStart.

With FloppyBuilder function of ServerStart, you can create the following tools:

- "Server Management Tools" disk
- DOS Diskette

FloppyBuilder can be used under environments such as:

- The ServerStart system started on a client computer (recommended)
- The ServerStart system started from PRIMERGY Startup Disc on the server

IMPORTANT

- Confirm that the USB floppy disk drive is connected before turning on the server power.

POINT

- When creating the tools on a client computer, it is necessary to install ServerStart on the client computer beforehand.
  If ServerStart of a different version is installed on the computer, make sure to uninstall the ServerStart. Then perform installation again.
  For details on how to uninstall ServerStart, refer to "■ Uninstalling ServerStart" (→p.90)

4.4.1 Installing ServerStart

Install ServerStart on a client computer when creating a drive disk using FloppyBuilder function.

● System requirements for client computers

Client computers must satisfy the following requirements.

Hardware	Personal computers operated with Windows XP Professional (A DVD drive and minimum 10MB free disk space are required.)
Software	Microsoft® Internet Explorer 5.5 or later

POINT

Using ServerStart on the server

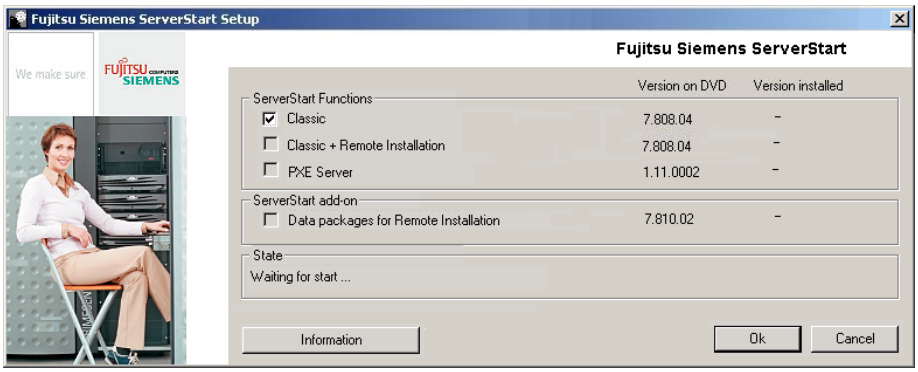
- ServerStart can be installed to the server, Windows Server 2008 or Windows Server 2003 employed. Install ServerStart in accordance with this chapter.

1 Insert the PRIMERGY Startup Disc into the client computer.

The [PRIMERGY Startup Disc] window appears.

2 Click [ServerStart V7.808].

[Fujitsu Siemens ServerStart] window appears.



POINT

- The massage "Do you want to run or save this file?" may appear depending the OS in use. Follow as below.
  1. Click [Run].
     A massage appears that "The publisher could not be verified. Are you sure you want to run this software?"
  2. Click [Run].
     Execute "SeStSetup.exe" in the disk when [Fujitsu ServerStart Setup] window is not displayed.

3 Check the checkbox of [Classic] only and click [OK].

The Setup window appears.

4 Click [Next].

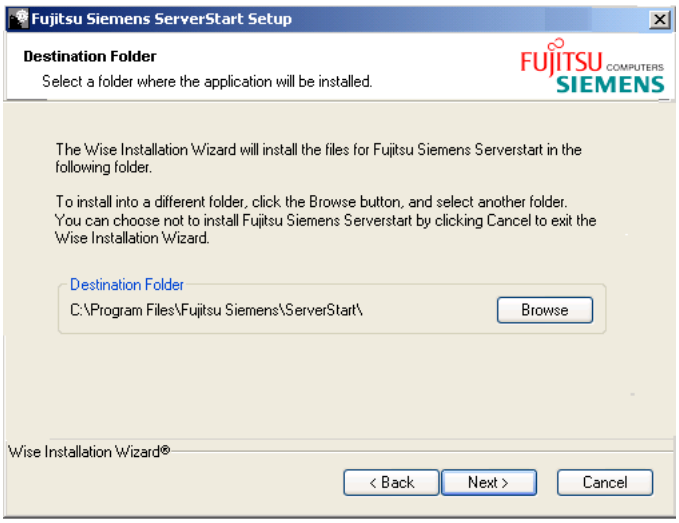
The [License Agreement] window appears.

5 Select [I accept the license agreement] and click [Next].

The [User Information] window appears.

6 Enter the user information of the software and click [Next].

The [Destination Folder] window appears.



7 Specify the installation folder and click [Next]. To change the installation folder, click [Browse] and select the folder.

The [Ready to Install the Application] window appears.

8 Click [Next].

Installation is executed.

POINT

- If a message prompts you to restart the system before or after installation, eject the disc and restart the system according to the message. When the system restarts, insert PRIMERGY Startup Disc and start installation again.
  If the "This program does not respond." message appears during restart operation, click [Exit] to continue the restart operation.

When the installation is completed, the completion window appears.

9 Click [Exit].

ServerStart has been installed to the client computer.

■ Uninstalling ServerStart

Uninstall ServerStart on the client computer according to the following procedure when necessary.

1 Click [Start] – [All Programs] – [Fujitsu Siemens ServerStart] – [Uninstall ServerStart].

2 Click [OK].

When the uninstallation is executed successfully, ServerStart is deleted.

4.4.2 Startup Method for FloppyBuilder

Start up ServerStart and FloppyBuilder. Startup methods vary depending on the cases of creating on a client server, or the server.

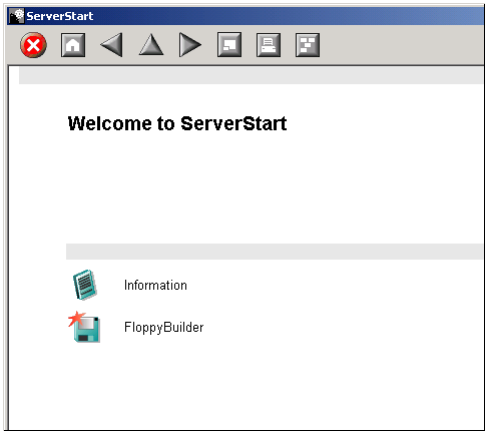
- **For creation on a client computer**

1 Set the PRIMERGY Startup Disc to the client computer.

Once "PRIMERGY Startup Disk" window appears, exit the window.

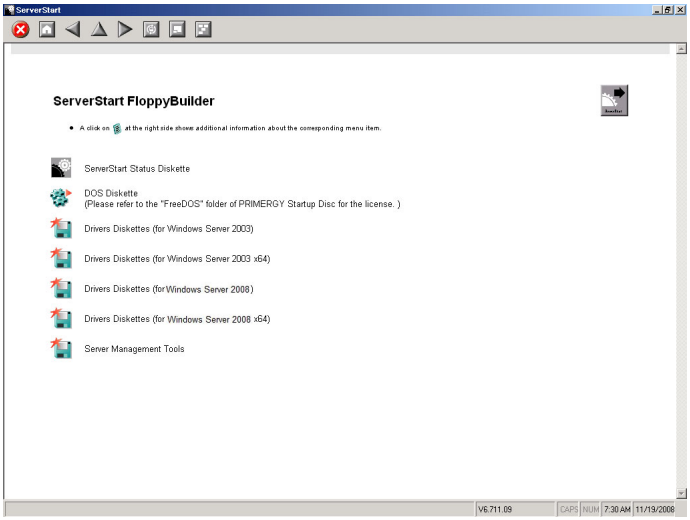
2 Click [Start] – [All Programs] – [Fujitsu Siemens ServerStart] – [ServerStart (Start from DVD)].

ServerStart starts up and the [Welcome to ServerStart] window appears.



3 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.



- **For creation on the server**

1 Turn on the power of the server and set PRIMERGY Startup Disc.

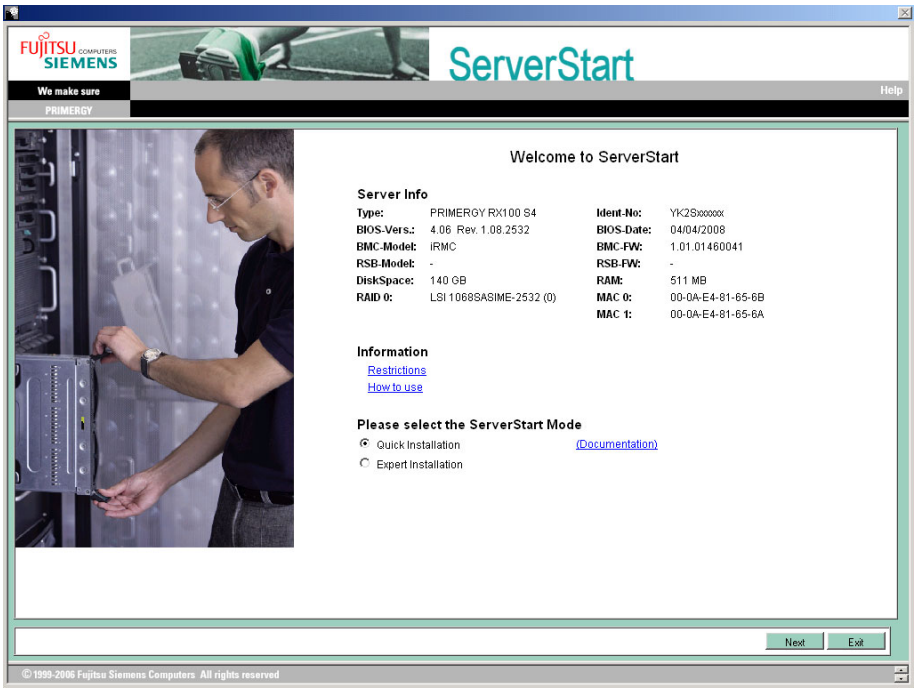
ServerStart starts up and select media window for the configuration file appears.

2 Select [RAM Disk] and click [Next].

The [Initialization of ServerStart core running] window appears and the initialization operation launches. In some cases, initialization operation may take a few minutes, depending on hardware configuration. After completion, the license agreement window appears.

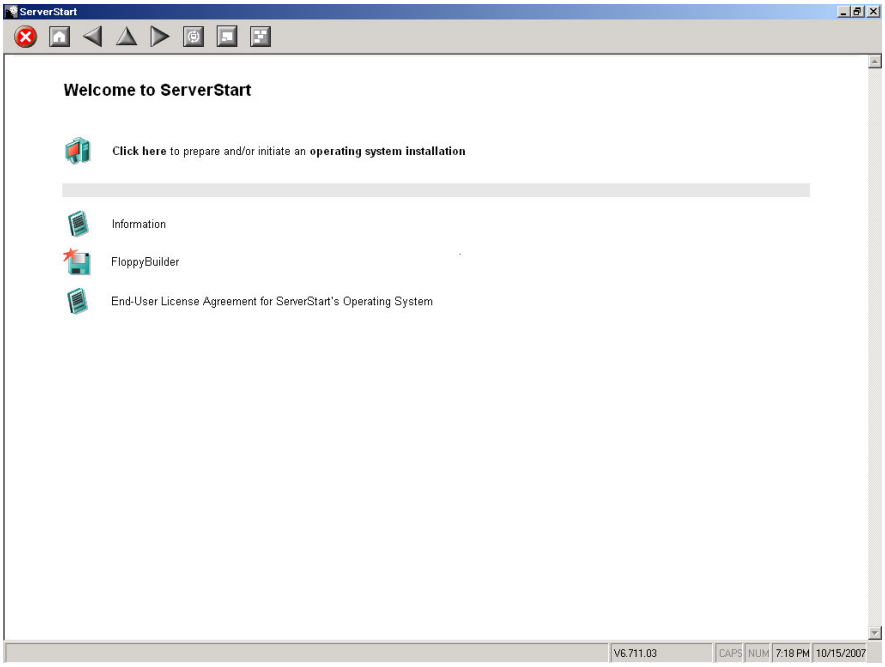
3 Click [Accept].

The [Welcome to ServerStart] window appears.



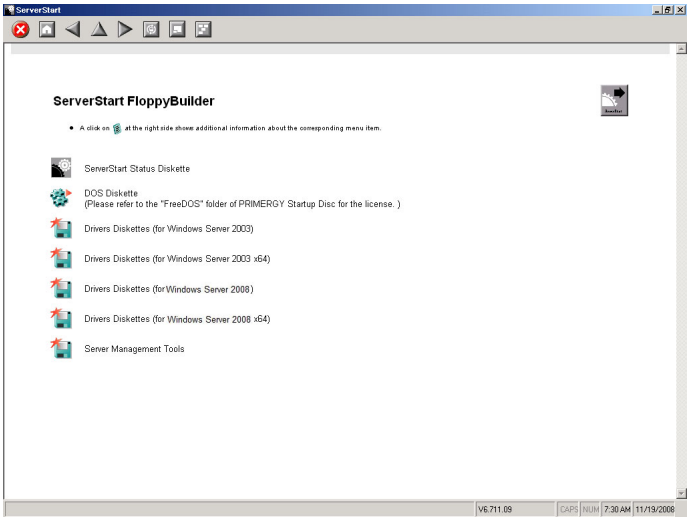
4 Select [Expert Installation] and click [Next].

The [Welcome to ServerStart] window appears.



5 Click [FloppyBuilder].

The [ServerStart FloppyBuilder] window appears.



4.4.3 Creating "Server Management Tools" disk

Start up ServerStart and confirm that the FloppyBuilder window is displayed.

1. Click [Server Management Tools].

2. Click the tool to be created.
   Insert the prepared floppy disk by following the message.

3. Perform the subsequent operations according to the messages on the window.
   The floppy disk will be formatted automatically and file copying will start.
   The respective tools will be created automatically. When a message appears indicating that the disk is created, click [OK] and eject the disk.

4. Fill the following items on the label of the floppy disk.
   - The model of the server
   - Version and Level of the Server Management Tools
   - Date of the floppy disk created

4.4.4 Creating Driver Disks

Obtain floppy disks as many as the drivers to be created before taking the procedures below.
Start up ServerStart and confirm that the FloppyBuilder window is displayed.

1. Click [Drivers Diskettes (for OS)].
   The [FloppyBuilder Driver Disk] window appears.

2. Click the type of the driver to be created.

3. Click the driver disk to be created.
   Follow the message and insert a floppy disk.

4. Perform the subsequent operations according to the messages on the windows.
   The floppy disk will be formatted automatically and file copying will start.
   The driver disk is automatically created. When a message appears indicating that creating the disk is completed, click [OK] and eject the floppy disk.

4.4.5 Creating a DOS Diskette

For DOS data stored into the floppy disk, refer to the file in the following folder of the PRIMERGY Startup Disc.
[CD/DVD drive]:\FreeDOS
To create a DOS diskette, prepare an unused floppy disk.
Start up ServerStart and confirm that the FloppyBuilder window is displayed.

1. Start up ServerStart and Click [FloppyBuilder].

2. Click [DOS Diskette].

3. Perform the subsequent operations according to the messages on the window.
   The floppy disk will be formatted automatically and file copying will start.
   The DOS diskette will be created automatically. When a message appears indicating that the disk is created, click [OK] and eject the disk.

4.5 Notes before Operating the Server

This section explains the settings required before starting to operate the server. For details on the settings, refer to the following URL.
http://www.microsoft.com/technet/prodtechnol/exchange/2003/Library/default.mspx

POINT

- For the settings of the installed application software supplied with the server, refer to the manuals of each of them.

IMPORTANT

- For notes on the ServerView security, refer to "●Security" in "1.1.7 Notes" in the "ServerView User's Guide".

4.5.1 Auto-run Function from CD/DVD Drives

Perform the following procedures to change the settings of the auto-run function from the CD/DVD drives after server installation:

1. Make the registry editable, and change the value of AutoRun of the following registry key:
   HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\CDRom
   Set the value of AutoRun to "1" to enable auto-run, or to "0" to disable auto-run.

2. Restart the system.
   The setting is enabled after the system restarts.

4.5.2 Drive Letter Assignment in the Expert Mode

In the expert mode, assignment of a drive letter to a particular partition arbitrarily is not available. Drive letters specified on Disk Manager in the expert mode will be sequentially assigned from the first partition with "C, D, E..." when installation is completed, and an unused drive letter will be assigned to the CD/DVD drive. When change the drive letter, perform the following procedures after installation.

IMPORTANT

- The drive letters for the system and boot drive is not changeable.

1. Click [Start] – [Administrative Tools] – [Computer Management].

2. Click [Disk Management].

3 Right-click the partition to change the letter and click [Change Drive Letter and Path].
The [Change Drive Letter and Path] window appears.

4 Click [Edit].
The [Change Drive Letter or Path] window appears.

5 Change the drive letter.

4.5.3 Notes on Advanced Uninterruptible Power Supply (UPS)

Note the following cautions when using an advanced uninterruptible power supply (referred to as UPS herein).

■ UPS shutdown time setting

Set a sufficient time interval of UPS power-off time (time from the shutdown command to the actual power-off). If the interval is not adequate, the power will cut off before system shutdown. It may cause data collapse. For details, refer to the manuals of UPS and the UPS management software.

■ Power supply control by UPS

Change the BIOS settings to turn on the server automatically at power recovery or during scheduled operation using the UPS management software (PowerChute Network Shutdown and PowerChute Business Edition).

1 Start the BIOS Setup Utility.
→"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

2 Select [Power On/Off] in the [Advanced] menu, and press the [Enter] key.
→"7.2.9 Power On/Off Submenu" (p.196)
The [Power On/Off] submenu screen appears.

3 Set [Power Failure Recovery] to [Always On].

4 Save the changes and exit the BIOS Setup Utility.

4.5.4 Using the Fiber Channel Controller (PG-FC202)

To use the Fiber Channel Controller (PG-FC202), the driver needs to be updated after installing the OS. You can use the driver supplied with the Fiber Channel Controller or download it from the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

4.5.5 Turning the Power On via a LAN

You can turn the power on the server from a client (via a LAN) by utilizing the Wakeup on LAN (WOL) function.

IMPORTANT

- Be sure to install ServerView to control the power supply via a LAN.

POINT

- When the power cable is disconnected from the server or the server is powered off due to power interruption, restart the server. Unless otherwise, the WOL function will be disabled.
- Only the onboard LAN is available to correspond to the WOL function for this server. To control power supply via a LAN, connect the onboard LAN and set the onboard LAN adapter bind to "1" for sure.

■ BIOS Setup Utility setting

When perform power management via a LAN, set [Enabled] in the [LAN] item of the "7.2.9 Power On/Off Submenu" (→p.196) in the BIOS Setup Utility. The [Enabled] in the [LAN] has been set as the initial setting.

4.5.6 Changing the system drive size (only for Windows Server 2008)

For Windows Server 2008, the partition size can be extended or reduced after installation has completed.

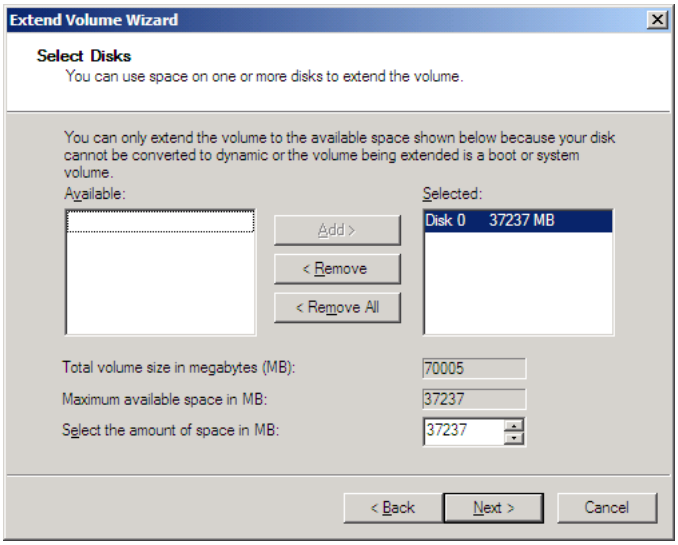
■ Extending the partition size of a system drive

To extend the partition size of a system drive, perform the following procedure.

1. Log on to the server with administrator privileges.
2. Click [Start] – [All Programs] – [Administrative Tools] – [Server Manager].
   Server Manager starts.
3. Double-click [Storage] – [Disk Management].
   The [Disk Management] window appears.
4. Right-click the volume to be extended in [Disk Management], and click [Extend Volume].
   The [Welcome to the Extend Volume Wizard] window appears.

5 Click [Next].

The [Select Disks] window appears.



6 Specify the desired size in [Select the amount of space in MB].

POINT

- The total value of the current partition size and the value that is specified in [Select the amount of space in MB] is displayed in [Total volume size in megabytes (MB)]. Specify the value so that the total of the volume sizes becomes a partition size to be created.
- The maximum value that can be specified in [Select the amount of space in MB] is displayed in [Maximum available space in MB].

7 Click [Next].

The [Completing the Extend Volume Wizard] window appears.

8 Check the disk size and click [Finish].

The [Disk Management] window appears.

9 Click [Exit] in the [File] menu.

Server Manager finishes.

■ Reducing the partition size of system drive

When reducing the partition size of system drive, perform the following procedures.

1 Log on to the server with administrator privileges.

2 Click [Start] – [All Programs] – [Administrative Tools] – [Server Manager].

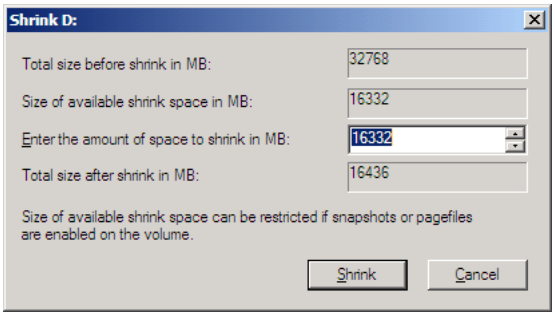
Server Manager starts.

3 Double-click [Storage] – [Disk Management].

The [Disk Management] window appears.

4 Right-click the volume to be reduced, and click [Shrink Volume].

The [Shrink <Selected volume>:] window appears.



IMPORTANT

- Size of available shrink space can be restricted if snapshots or pagefiles are enabled on the volume.

5 Specify the desired size in [Enter the amount of space to shrink in MB].

POINT

- The partition size after changing is displayed in [Total size after shrink in MB].
  Specify the value so that the total size after reduction becomes the desired partition size.
- The maximum value that can be specified in [Enter the amount of space to shrink in MB] is displayed in [Size of available shrink space in MB].

IMPORTANT

- Click [Shrink] to start the shrinking process. Make sure to check whether the proper value is specified in [Total size after shrink in MB] before clicking [Shrink].

6 Click [Shrink].

Shrinking is executed, the [Disk Management] window appears.

7 Click [Exit] in the [File] menu.

Server Manager finishes.

4.5.7 Other Notes on Operation

■ Unnecessary files

After OS installation is completed, folders named Runonce and Runonce 2 may be left in the drive where the OS has been installed. Delete these folders since those are not necessary for the system operation.

■ Automated system operation

When perform automated system operation, enhancement of the safety operation with this server against unexpected accidents is necessary, employing such measures as introducing disaster-prevention provisions and stationing responsible for disaster prevention (such as a security guard or janitor) in the building.

■ Unintentional power-off prevention

It is recommended to employ a dedicated power supply device (such as a power distribution board) to prevent accidental power shut-offs.

4.6 LAN Driver Advanced Setup [BACS]

BACS is an integrated GUI application consisting of programs such as Broadcom Advanced Server Program (BASP) that provides load balancing features, etc., by teaming up multiple adapters.
BACS is used in the following situations:

- When using the teaming (load balance) function between onboard LANs.
- When setting up a VLAN using the onboard LAN
- When performing advanced setup of the onboard LAN

IMPORTANT

- The teaming function cannot be performed between a LAN card and the onboard LAN.
- In Windows Server 2008 Server Core installation environment, BACS cannot be installed.
- The diagnostic function that is started from the [Diagnostics] tab cannot be used on BACS.

POINT

Use of Intel® PROSet

- Use Intel® PROSet (→p.118) to perform the following advanced setup of a LAN card:
  - When performing the teaming function between LAN cards
  - When setting up a VLAN using a LAN card
  - When performing advanced setup of a LAN card

4.6.1 .NET framework Installation

When using Broadcom Control Suite in Windows Server 2003/2003 x64, ".NET framework" must be installed in the server.
When a newer version than ".NET framework2.0" is not installed in the server, install the .Net framework 3.5 according to the following procedure.

1. Execute the following file contained in the PRIMERGY Startup Disc.
   [CD/DVD drive]:\PROGRAMS\General\Microsoft\NET framework\dotnetfx35.exe

   The installer starts up.
   The .NET framework 3.5 installation wizard appears.

2. Check the contents, select [ACCEPT], and click [Install].
   Installation starts.

3. When the installation completion window appears, click [Exit].

4.6.2 BACS Installation

If [Broadcom Control Suite 2] is not displayed in the [Control Panel], install BACS according to the following installation procedures:

1. Execute the following file contained in the PRIMERGY Startup Disc.

   For Windows Server 2008 (64-bit)
   [CD/DVD drive]:\PROGRAMS\General\Broadcom\w2k8\MgmtApps_x64\setup.exe

   For Windows Server 2008 (32-bit)
   [CD/DVD drive]:\PROGRAMS\General\Broadcom\w2k8\MgmtApps\setup.exe

   For Windows Server 2003 x64
   [CD/DVD drive]:\PROGRAMS\General\Broadcom\MgmtAppsx64\setup.exe

   For Windows Server 2003
   [CD/DVD drive]:\PROGRAMS\General\Broadcom\MgmtApps\setup.exe

   The installer starts up.
   The Broadcom Management Programs installation wizard appears.

2. Click [Next].
   License agreement window appears.

3. Click [I accept the terms in the license agreement] and click [Next].
   Custom Setup window appears.

4. Check that [Control Suite] and [BASP] are selected, and click [Next].

5. Click [Install].
   Installation starts.

6. When the installation completion window appears, click [OK].

7. Click [Exit].

4.6.3 Teaming

■ Notes

The following are notes on using teaming via BACS. For details, refer to BACS help.
However, when the content of help and this manual differ, follow the instructions in this manual.

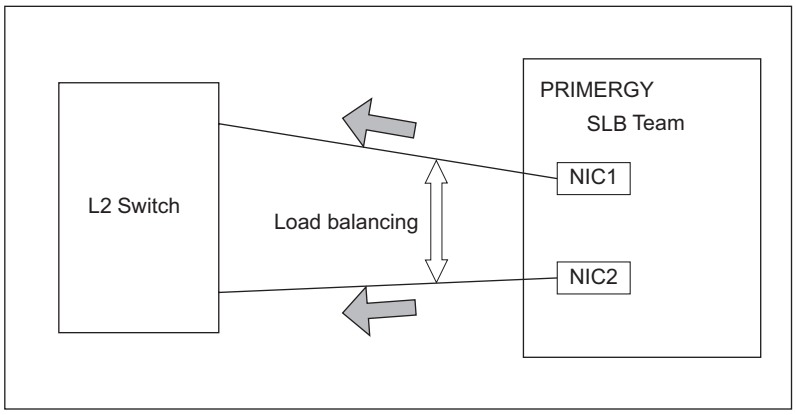
- Once a Team is created, virtual adapters (BASP Virtual Adapter) will be created in the system. Do not disable or delete a virtual adapter from the [Device Manager] or [Network Connections]. When deleting a virtual adapter, make sure to use BACS.
  Do not disable or delete an actual adapter from the [Device Manager] or [Network Connections]. When disabling or deleting an actual adapter, delete it from the team using BACS first before disabling or deleting an actual adapter.
- When using Teaming, only use IP protocols.
- When using Teaming, Windows Load Balancing Server (WLBS) and Network Load Balancing (NLB) cannot be used.
- When an onboard LAN is incorporated into a team, and when the server's power is turned on via the onboard LAN, a packet for power control, which specifies the MAC address of the onboard LAN that turns the server on, must be sent to the onboard LAN that turns the server. Also, packets for power control, which specify the MAC addresses of the other team ports, must be sent to the onboard LAN.

■ Teaming types

NIC (LAN controller) can be made redundant by teaming multiple NICs via BACS, and creating a virtual NIC (virtual LAN controller). BACS has three teaming modes (Smart Load Balancing, 802.3ad Link Aggregation using Link Aggregation Control Protocol (LACP), FEC/GEC Generic Trunking).

● Smart Load Balancing (Smart Load Balancing (TM) and Failover)

Smart Load Balancing enables load-balancing with the TCP/UDP session base by sharing IP addresses with multiple NICs, and using a virtual NIC. Even when a NIC fails while communicating, the communication can be continued using multiple NICs.

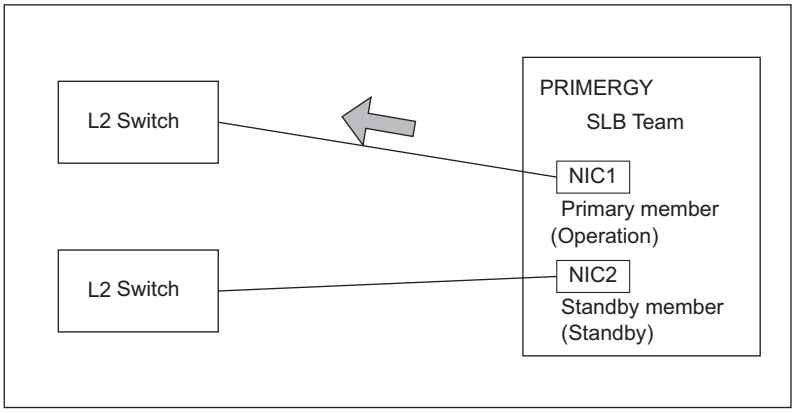


For Smart Load Balancing, one NIC can be set as a standby member. If all the primary members fail, the same MAC address or IP address is taken over to the standby member to continue the communication (fail-over). When using a standby member for Smart Load Balancing, Auto-Fallback mode or Auto-fall back disable mode can be set.

Smart Load Balancing (Auto-Fallback mode)

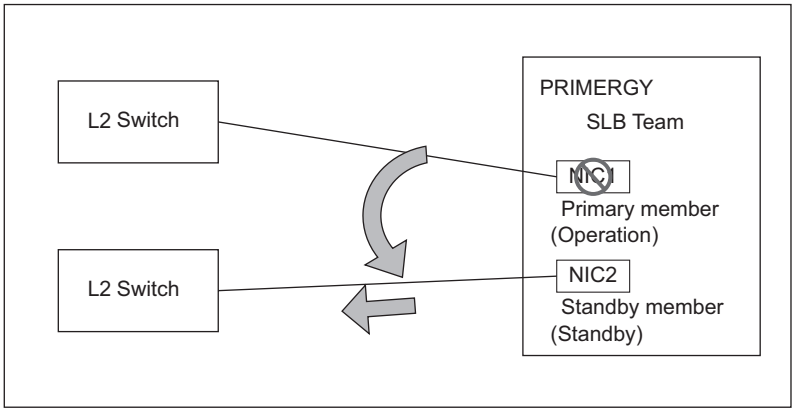
In this mode, separate multiple NICs into primary members (operation) and standby members (standby) to operate.
Usually, a primary member is active for communicating. A standby member is inactive and does not perform data communication.

[Standby member]



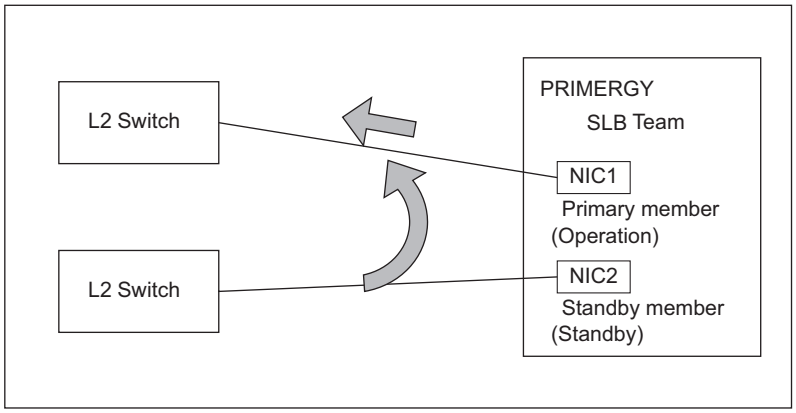
If a link abnormality is detected in a primary member, a standby member becomes active (fail-over) to continue communication.

[Fail-over]



When the link status of the primary member is restored, the primary member returns to active status, and the standby member returns to inactive status (fallback).

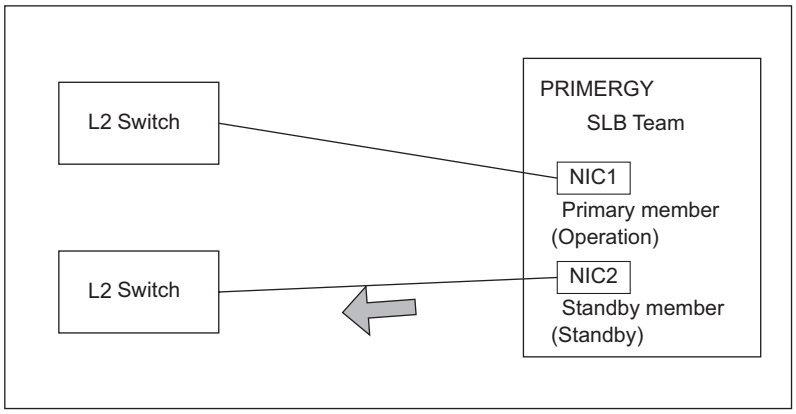
[Auto-Fallback mode]



Smart Load Balancing (Auto-fall back disable mode)

In this mode, a standby member is used as an active member and fallback does not occur even when the standby member is active and the link status of the primary member is restored.

[Auto-fall back disable mode]

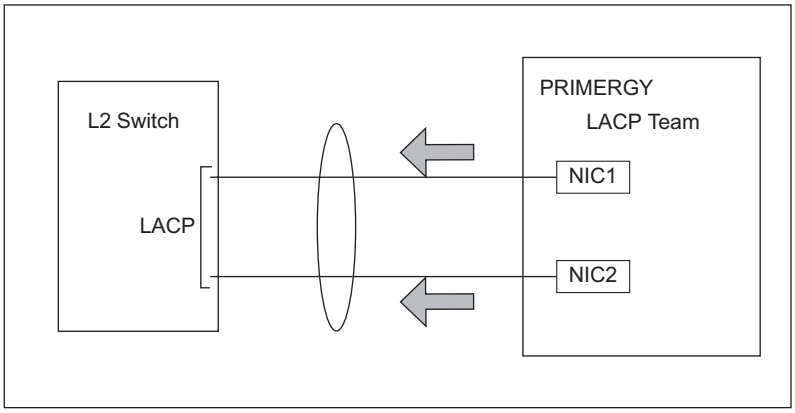


● 802.3ad Link Aggregation using Link Aggregation Control Protocol (LACP)

In this mode, configure a team using the Link Aggregation Control Protocol (LACP).
All the team members must be connected to the same switch where LACP is set. Also, a standby member cannot be set in this mode.

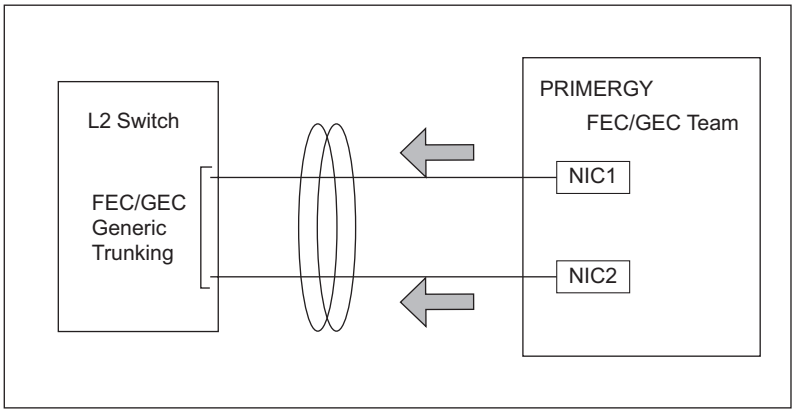
IMPORTANT

- For Windows Server 2003 (when using BACS2), do not use this mode.



● FEC/GEC Generic Trunking

In this mode, configure a team using FEC/GEC Generic Trunking.
All the team members must be connected to the same switch where FEC/GEC Generic Trunking is set.
Also, a standby member cannot be set in this mode.



IMPORTANT

Errors that teaming can detect

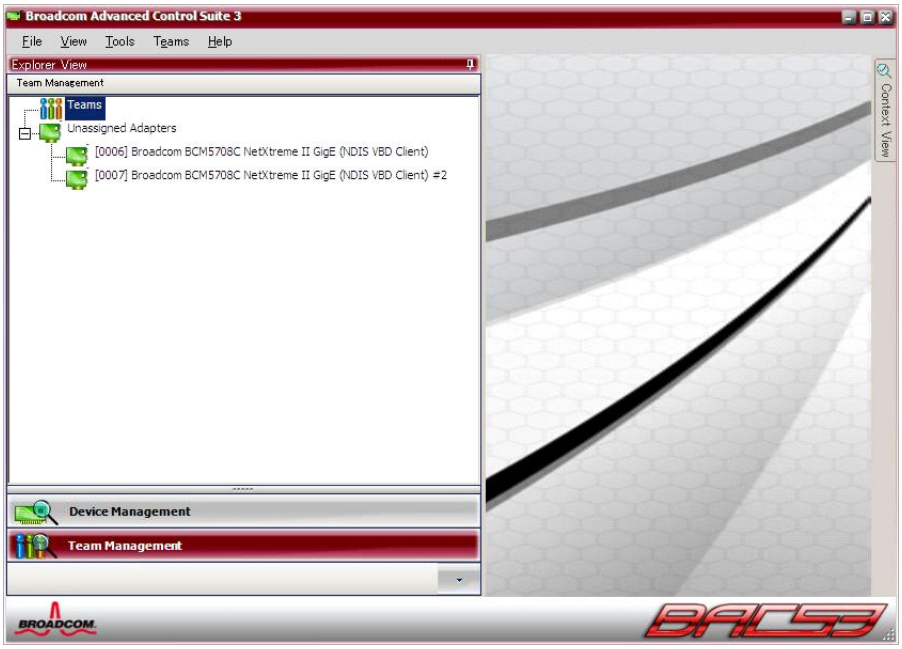
- For Smart Load Balancing and FEC/GEC Generic Trunking, only a link down error between a LAN card (onboard LAN) and the switch it connects with, and the equivalent errors lead to switching of the route. Therefore, if only the switch or LAN card (onboard LAN) is partially damaged and the route being used is sound at the link level, the route will not be switched in the team, but the communication with the Team may become an error.
  When the mode is 802.3ad Link Aggregation using Link Aggregation Control Protocol (LACP), the path is switched from the failed port to the normal port according to LACP protocol.

■ Team setting procedure

1 Log in with Administrator or same privileges.

2 Click [Start] – [Control Panel] – [Broadcom Control Suite 3].

Broadcom Control Suite 3 starts.



IMPORTANT

- The onboard LAN name that is displayed in BACS 3 may differs depending on the server.

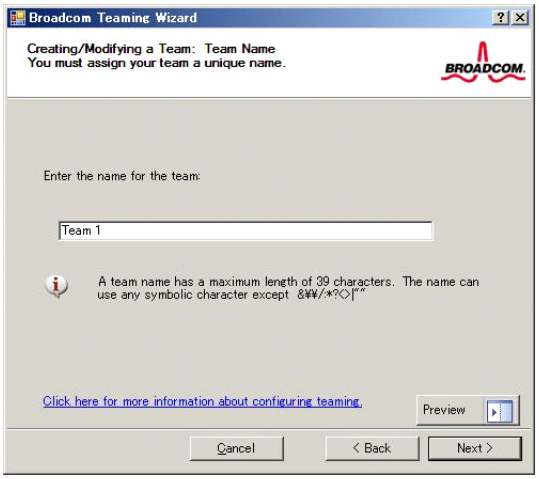
3 Click [Team Management].

4 Click [Create a Team] in the [Teams] menu.

The [Welcome to the Broadcom Teaming Wizard] window appears.

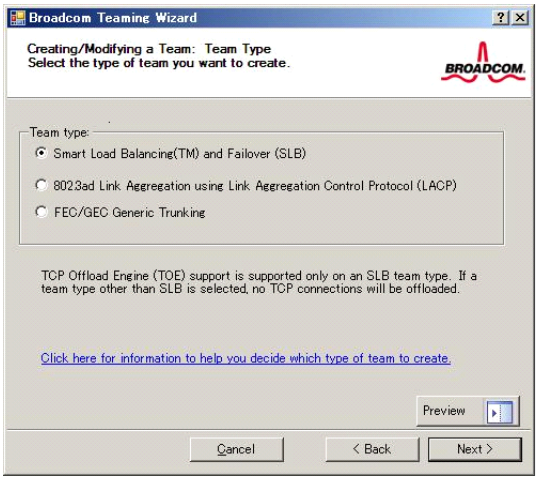
5 Click [Next].

The [Team Name] window appears.



6 Enter a team name, and click [Next].

The [Team Type] window appears.

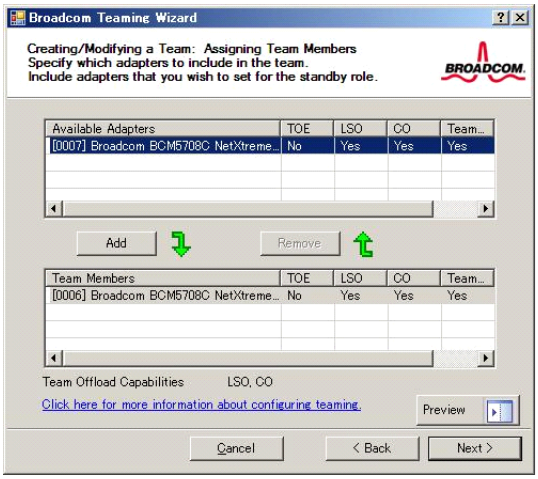


7 Select the team type, and click [Next].

Select the team type from the following.

- Smart Load Balancing (TM) and Failover (SLB)
- 802.3ad Link Aggregation using Link Aggregation Control Protocol (LACP)
- FEC/GEC Generic Trunking

The [Assigning Team Members] window appears.
The following is an explanation for when selecting [Smart Load Balancing (TM) and Failover (SLB)] as an example.



8 Select the adapter to be incorporated in the Team from the [Available Adapters] list, and click [Add].

The selected adapter is added in the [Team Members] list.

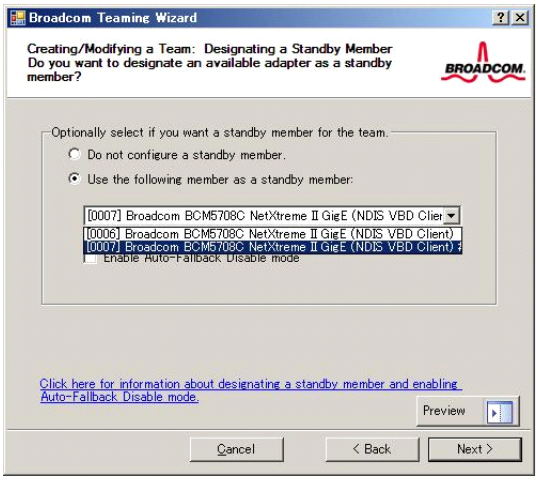
IMPORTANT

- Do not incorporate an onboard LAN into the Team when performing remote operation via RemoteControlService.
- If the following message is displayed when performing remote operation via RemoteControlService, click [No] and remove the onboard LAN from the Team.
  When not performing remote operation via RemoteControlService, click [Yes].

9 Click [Next].

For Smart Load Balancing (TM) and Failover (SLB)

The [Designating a Standby Member] window appears. Go to Step 10.



For other modes

The [Configure VLAN Support] window appears. Go to Step 12.

10 Set for the standby member, and click [Next].

When not using a standby member

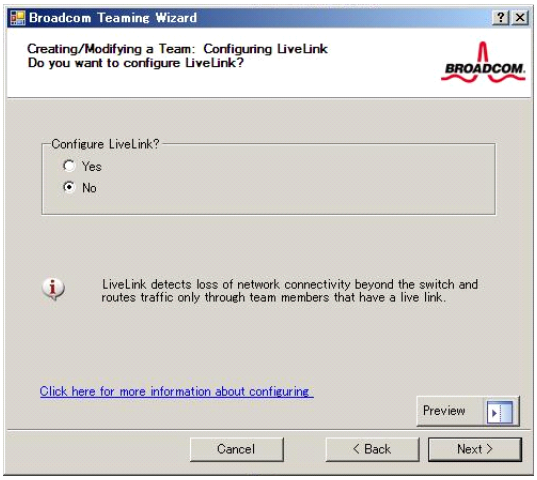
Select "Do not configure a standby member".

When using a standby member

Select "Use the following member as a standby member" and then select the adapter to be a standby member from the pull-down menu.

To disable Auto-Fallback, click "Enable Auto-Fallback Disable mode".

The [Configuring LiveLink] window appears.



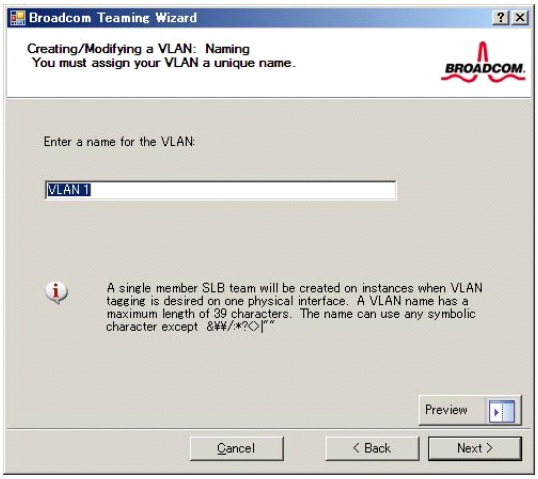
11 Select [No] and click [Next].

The [Configure VLAN Support] window appears.

12 When setting for VLAN, select [Add VLAN]. when not setting, select [Skip manage VLAN]. Then click [Next].

When selecting [Add VLAN]

The [Naming] window appears. Go to Step 13.

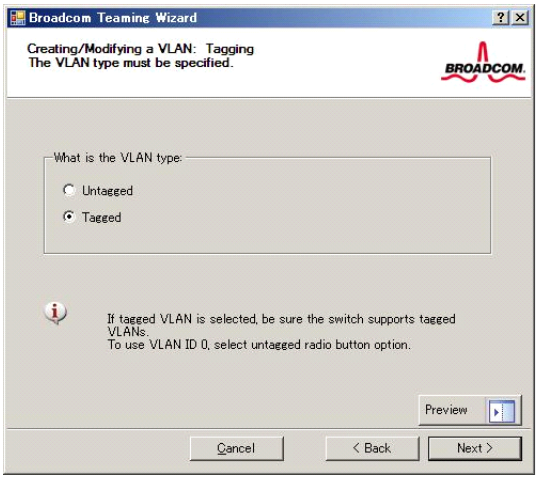


When selecting [Skip manage VLAN]

Go to Step 17.

13 Specify a VLAN name, and click [Next].

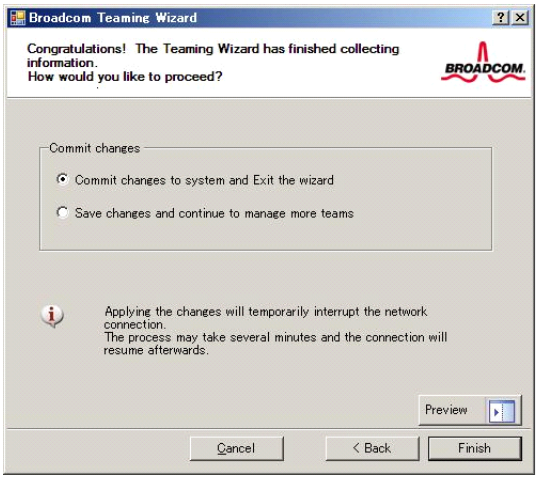
The [Tagging] window appears.



14 When setting the VLAN type as tagged, select [Tagged]. When setting the VLAN type untagged, select [Untagged]. Then click [Next].

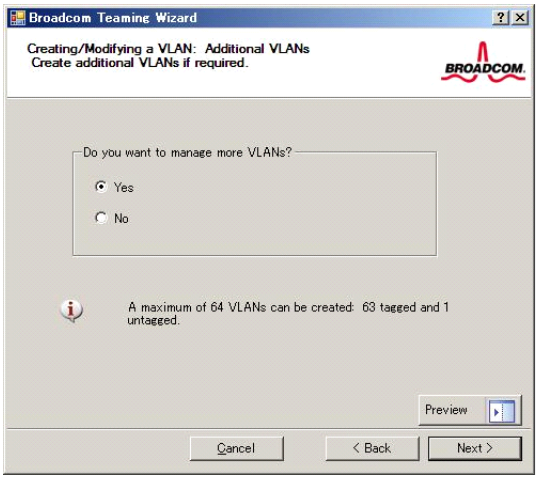
When selecting [Tagged]

The [Tag Value] window appears. Go to Step 15.



When selecting [Untagged]

The [Additional VLANs] window appears. Go to Step 16.



15 Specify the tag VLAN ID of the tag VLAN, and click [Next].

The [Additional VLANs] window appears.

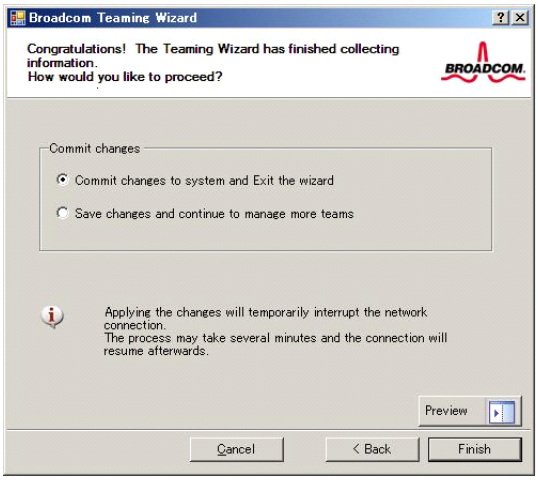
16 When creating an additional VLAN, select [Yes]. When finishing adding a VLAN, select [No]. Then click [Next].

When selecting [Yes]

Repeat Steps 13 to 15.

When selecting [No]

The [Commit changes] window appears. Go to Step 17.



17 Select [Commit changes to system and Exit the wizard] and click [Finish].

The following window appears.

18 Click [Yes].

Settings are completed.

4.6.4 VLAN

■ Notes

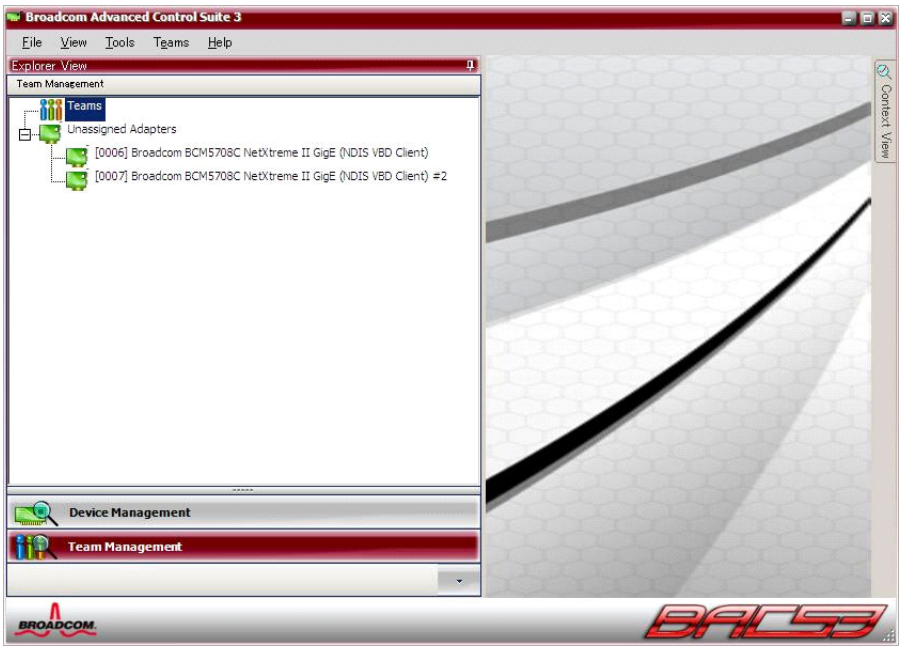
The following are notes on using VLAN via BACS. For details, refer to BACS help.
However, when the content of help and this manual differ, follow the instructions in this manual.

- When creating a VLAN, a virtual adapter "BASP Virtual Adapter" will be created in the system. Do not disable or delete a virtual VLAN from the [Device Manager] or [Network Connections]. When deleting a virtual VLAN, make sure to use BACS.
- On a VLAN, only use IP protocols.
  When LLC and the LNDFC protocols are installed by the Fujitsu communication control service, VLAN and these protocols are bound (connected) unconditionally. Therefore, release the bind of VLAN and these protocols in the system where protocols other than IP and VLAN are installed at the same time.
- Up to ten VLANs can be set to a LAN port.
- Up to four VLANs whose "NetBIOS over TCP/IP" is enabled in the whole system.

■ VLAN setting procedure

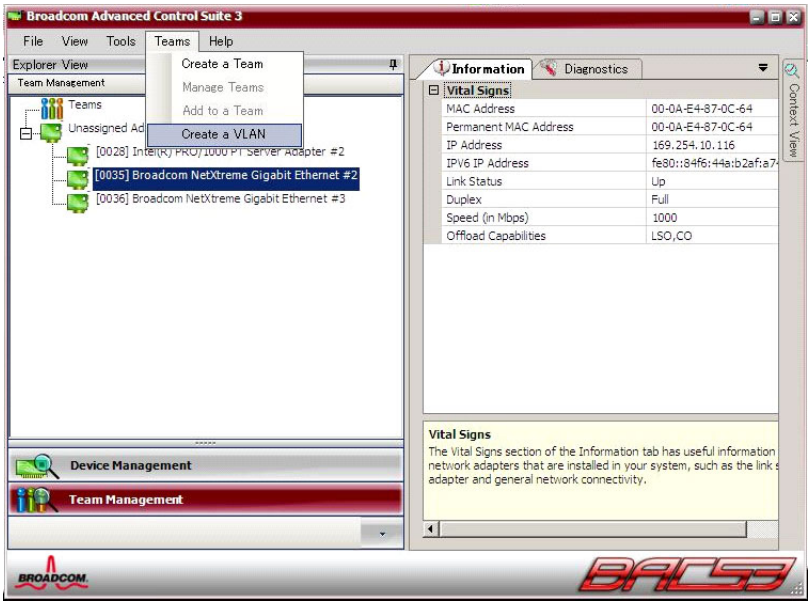
1 Log in with Administrator or same privileges.

2 Click [Start] – [Control Panel] – [Broadcom Control Suite 3].
The [Broadcom Advanced Control Suite 3] window appears.



3 Click [Team Management].

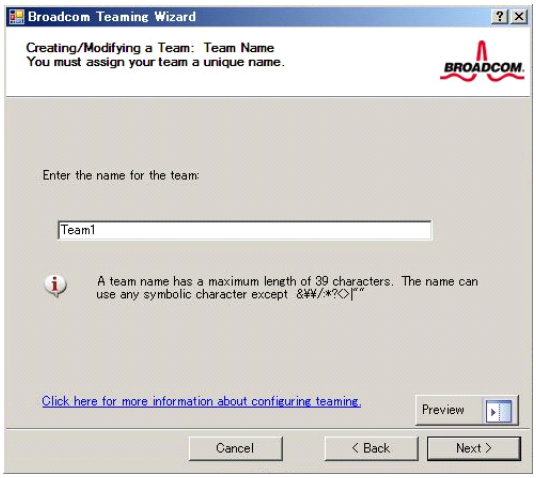
4 Select a LAN port that configures a VLAN from the list on the left side of the window, and click [Create a VLAN] in the [Teams] menu.



The [Welcome to the Broadcom Teaming Wizard] window appears.

5 Click [Next].

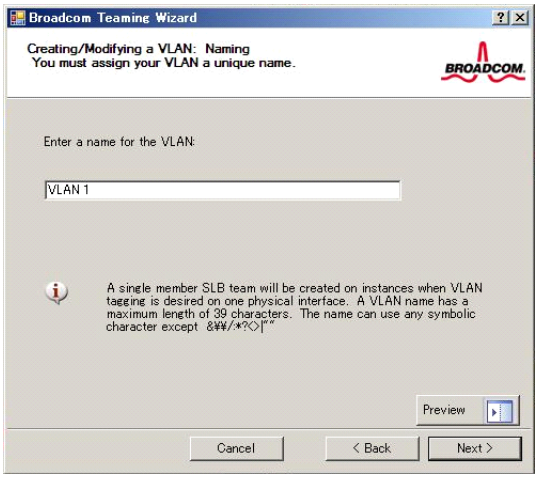
The [Team Name] window appears.



6 Specify a team name and click [Next].

When creating a new VLAN, a team whose member is one port is set.

The [VLAN Naming] window appears.



7 Enter a VLAN name, and click [Next].

The [Tagging] window appears.

Henceforth, go to Step 14 in "■ Team setting procedure" (→p.108).

4.7 LAN Driver Advanced Setup [Intel® PROSet]

"Intel® PROSet" is a tool for configuring details on the LAN driver. It is used in the following cases.

- When using the Teaming function between LAN cards
- When setting up a VLAN using a LAN card
- When performing advanced setup of a LAN card

IMPORTANT

- The teaming function cannot be performed between a LAN card and the onboard LAN.
- In Windows Server 2008 Server Core installation environment, Intel® PROSet cannot be installed. Therefore, Teaming and VLAN cannot be used in Server Core installation environment.
- [Connection] and [Cable] test of the diagnostic function that is executed from the [Link speed] tab of Intel® PROSet, cannot be used.

POINT

Use of BACS

- Use BACS (→p.102) to perform the following advanced setup of the onboard LAN:
  - When using the teaming (load balance) function between onboard LANs.
  - When setting up a VLAN using the onboard LAN
  - When performing advanced setup of an onboard LAN

4.7.1 Intel® PROSet Installation

If tabs, such as [Link], [Teaming] and [VLAN], are not displayed in the LAN adapters properties that can be selected from the [Device Manager], install Intel® PROSet according to the following installation procedures:

1. Execute the following file contained in the PRIMERGY Startup Disc.

   For Windows Server 2008 (64-bit)
   [CD/DVD drive]:\DRIVERS\LAN\Intel\APPS\PROSETDX\Vistax64\DxSetup.exe

   For Windows Server 2008 (32-bit)
   [CD/DVD drive]:\DRIVERS\LAN\Intel\APPS\PROSETDX\Vista32\DxSetup.exe

   For Windows Server 2003 x64
   [CD/DVD drive]:\DRIVERS\LAN\Intel\APPS\PROSETDX\Winx64\DxSetup.exe

   For Windows Server 2003
   [CD/DVD drive]:\DRIVERS\LAN\Intel\APPS\PROSETDX\Win32\DxSetup.exe

2. Click [Next].

3 Select [Accept] and click [Next].

4 Select all the following items, and click [Next].

- "Driver"
- "Intel® PROSet for Windows Device Manager"
- "Advanced Network Service"

5 Click [Install].

6 Click [Finish].

4.7.2 Teaming

■ Notes

The following are notes on using teaming via Intel® PROSet. For details, refer to Intel® PROSet help. However, when the content of help and this manual differ, follow the instructions in this manual.

- Once a Team is created, virtual adapters will be created in the system. Do not disable or delete a virtual adapter from the [Device Manager] or [Network Connections]. When deleting a virtual adapter, make sure to use Intel® PROSet.
  Do not disable or delete an actual adapter from the [Device Manager] or [Network Connections].
  When disabling or deleting an actual adapter, delete it from the team using Intel® PROSet first before disabling or deleting an actual adapter.
- For AFT/ALB/Static link/Dynamic link type, up to four LAN ports can be incorporated into one team and two ports for a SFT type team.
- When the Teaming function is being used, only the following protocols can be used:
  - For AFT/SFT/Static/Dynamic link type: IP, NetBEUI, IPX (NCP), IPX (NetBIOS)
  - For ALB type: IP, IPX (NCP)
- When the Teaming function is being used, Windows Load Balancing Service (WLBS) and Network Load Balancing (NLB) cannot be used.
- Up to four teams can be configured in the same system. Up to two teams can be configured for Dynamic link.
- When using AFT/ALB/Static link/Dynamic link type, all ports in the team must be connected to the same switch.
- When using AFT/ALB/Static link type, the spanning tree function of the switch side port must be disabled.
- When adding/deleting a Static link/Dynamic link type member, perform such operation in a linked down state.
- For Static link/Dynamic link type, all adapters must run at the same speed.

IMPORTANT

- Only a link down error between a LAN card (onboard LAN) and the switch it connects with, and the equivalent errors lead to switching of the route. Therefore, if only the switch or LAN card (onboard LAN) is partially damaged and the route being used is normal at the link level, the route will not be switched in the team, but the communication using team may become an error.

■ Teaming types

Teaming has the following types.

● Adapter Fault Tolerance (AFT)

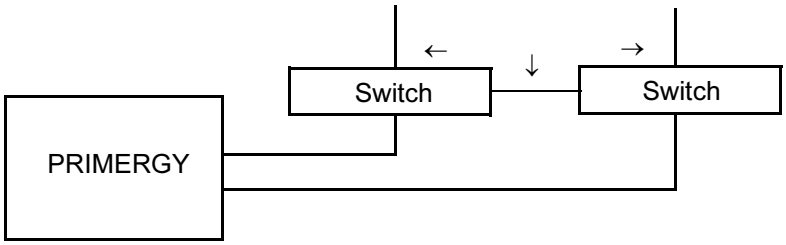
Adapter Fault Tolerance (AFT) is a technology to make the link between the server and switches redundant by using multiple LAN ports. When a failure occurs in the link being used (Primary Link), the communication continues by switching the process to the standby link (Secondary Link) without interrupting. For AFT, all ports in the team must be connected to the same switch.

● Adaptive Load Balancing (ALB)

Adaptive Load Balancing (ALB) is a technology that distributes the sending and receiving data to multiple LAN ports to improve the performance in addition to redundancy function of AFT (When "Receive Load Balancing (RLB)" in Advanced setting is set to "Disabled", the reception is done only in the Primary Link). For ALB, all ports in the team must be connected to the same switch as well as AFT.

● Switch Fault Tolerance (SFT)

Switch Fault Tolerance (SFT) is a redundancy function equal in configuration to AFT when LAN ports are connected to a separate switch. SFT switches the link to be used between LAN ports and switches that are connected to the LAN ports when a failure occurs. However, a failure in links outside of the switches (←, ↓, and → in the figure below) cannot be detected.



● FEC/GEC Generic Trunking

Select this mode when connecting a team to a Cisco FEC/GEC compliant switch or a switch that supports IEEE802.3ad-Draft Static. Switch settings are also necessary. All ports in the team must be connected to the same switch.

- **IEEE802.3ad dynamic link aggregation**

  Select this mode when connecting a team to a switch which supports IEEE802.3ad compliant Link Aggregation Control Protocol (LACP). In this mode, all adapters must run at the same speed, and all ports in the team must be connected to the same switch.
  Also, this mode is only available for Teaming on the LAN card.

■ Creating a team

1. Click [Start] – [Administrative Tools] – [Computer Management] to start Intel® PROSet.

2. Click [Network adapters] under [Device Manager] and double-click a LAN adapter to be incorporated in a team.

3. Click the [Teaming] tab, select [Team with other adapters] and click [New Team].

4. Enter a team name and click [Next].

5. Check the LAN adapter to be incorporated in the Team and click [Next].

   IMPORTANT

   - When using an onboard LAN for remote operation via RemoteControlService, do not check the onboard LAN (Do not incorporate the onboard LAN in the Team).

6. Select a Teaming type with which a Team will be created.

   Select the following depending on the Teaming type:

   - AFT type: "Adapter fault tolerance"
   - ALB type: "Adaptive load balancing"
   - SFT type: "Switch fault tolerance"
   - Static link type: "FEC/GEC Generic Trunking"
   - Dynamic link type: "IEEE802.3ad dynamic link aggregation"

7. Click [Finish].

8. Click [OK] to close the property window for created Teaming adapter.

   The property window for the LAN adapter is displayed.

   When the message "This team includes an adapter other than Intel®, and **** cannot be used." or "One or more adapters in the team do not support ****. **** is disabled." is displayed, click [OK].

9. Click [OK] to close the property window for the LAN adapter.

   When the Teaming setting is complete, the following virtual adapter will be created.

- "Team: (Team Name)"

Upper protocols will be bound with the main virtual adapter.
They cannot be bound with the LAN card included in a Team.
The IP address can be set in the main virtual adapter.

■ Event logs

When configuring a team, the following event logs will be generated (source: iANSMiniport).

table: Event log messages

ID	Type	Message
3	Error	The necessary registry parameter could not be read. To resolve this problem, delete the adapter team, and create a new team.
6	Information	The primary adapter has been initialized: (Adapter name)
7	Information	The adapter has been initialized: (Adapter name)
8	Information	(Team name): The team has been initialized.
10	Information	The current primary adapter is changed from the next adapter: (Adapter name)
11	Warning	The next adapter link is not connected: (Adapter name)
12	Information	The secondary adapter has a priority: (Adapter name)
13	Warning	(Adapter name) has been disabled with a team.
14	Information	The secondary adapter has been added to a team again: (Adapter name)
15	Information	The next adapter link is connected: (Adapter name)
16	Warning	(Team name): The last adapter has been unlinked. The team network connection has failed.
17	Information	(Team name): The adapter has established a link again. The team network connection has been recovered.
18	Information	The primary adapter at the next priority level has been detected: (Adapter name)
19	Information	The secondary adapter at the next priority level has been detected: (Adapter name)
20	Information	The primary adapter at the next priority level is preferentially handled: (Adapter name)
21	Information	The secondary adapter at the next priority level is preferentially handled: (Adapter name)
22	Warning	The primary adapter could not detect the next probe: (Adapter name) Cause: The team may be divided into groups.
35	Warning	(Team name) without one adapter is initialized. Confirm that all adapters exist and function.
38	Information	(Adapter name) has been deleted from the team.
42	Warning	(Adapter name) is not specified properly. The adapter cannot process the remote management function while being a network team.

IMPORTANT

- When the teaming function normally starts running, event logs (ID = 6 to 8) are stored at boot of the system. This is not a problem; no action is required.
- Once a Team is setup, plural warning logs (ID = 11, 13, 22) and event logs (ID =15, etc.) may be stored in the system log of the event viewer at boot of the system. This is not a problem; no action is required. When enable [Link Standby] in the [Advanced Settings] of the LAN adapter, warning logs (ID = 11, 13, 22) and event logs (ID =15, etc.) may not be stored.
- When not using the remote management function on the onboard LAN, event log (ID =42) may be stored. When not using the remote management function, this is not a problem; no action is required.
- When teaming starts operation properly, error log (ID =3) may be stored at system start. This is not a problem; no action is required.

4.7.3 VLAN

■ Notes

The following are notes on using VLAN via Intel® PROSet. For details, refer to Intel® PROSet help. However, when the content of help and this manual differ, follow the instructions in this manual.

- Up to four VLANs whose "NetBIOS over TCP/IP" is enabled in the whole system.
- Only ten or less VLANs can be set to a LAN port.
- When adding or deleting a VLAN, always use "Intel(R) PROSet". Do not disable or delete a VLAN from the [Device Manager] or [Network Connections].
- On a VLAN, only use IP protocols.
  When LLC and the LNDFC protocols are installed by the Fujitsu communication control service, these protocols are bound (connected) unconditionally. Therefore, release the bind of VLAN and these protocols in the system where these protocols and VLAN are installed at the same time.

■ Creating a VLAN

1 Click [Start] – [Administrative Tools] – [Computer Management] to start Intel® PROSet.

2 Click [Network adapters] under [Device Manager] and double-click a LAN card to setup a VLAN.

3 Click the [VLANs] tab, and click [New...].

4 Specify [VLAN ID] and [VLAN Name]. Then click [OK].
The [VLAN ID] should be identical to the switch setting. 1 to 4094 can be specified.
Any name can be specified as the [VLAN Name].

5 Click [OK] to close the property window for the LAN adapter.
When setup of the VLAN is complete, the following virtual adapter will be created.
• "(LAN Adapter Name)-VLAN:(VLAN Name)"
Upper protocols will be bound with the main virtual adapter. They cannot be bound with the LAN card configuring a VLAN. The IP address should be specified in the main virtual adapter.

Chapter 5
High Reliability Tools

For stable PRIMERGY server operations, we recommend that high reliability tools be installed. This chapter explains the installation and necessary settings of high reliability tools.

5.1 RAID Management Tool

RAID Management Tool performs configuration, initialization and monitoring of the hard disk array. For details, refer to the manual in the Array Controller Document & Tool CD.

POINT

OS installation using ServerStart

- When the OS has been installed using ServerStart, RAID Management Tool has been also installed together with the OS as well as other high reliability tools.

■ Before starting operation

Set an array administrator account for the RAID management tool (ServerView RAID).
For details, refer to the manual in the Array Controller Document & Tool CD.

● Configuration of array administrator account

Set an array administrator account for the RAID management tool (ServerView RAID).
A Windows user account is required when using ServerView RAID.
Create a group named "raid-adm", and an account with any name for an array administrator within the group, "raid-adm".

● Setting the HDD check scheduler

When using the SAS RAID Ctrl (MegaRAID SAS), change the settings for the HDD check scheduler according to the operation that is required. It is set to 12:00 everyday as default.

● Configuration of Battery Recalibration Scheduler

When using a SAS RAID Ctrl (MegaRAID SAS) together with a battery backup unit, change the settings of Battery Recalibration Scheduler according to the operation that is required. The default setting is 11:00 on the first of every month.

5.2 Server Monitoring Tool [ServerView]

ServerView constantly monitors the hardware status of each server in the network and, at the same time, provides a console which enables to recognize the status of all the servers promptly. ServerView keeps the server hardware under monitoring all the time. An error that could cause trouble, if detected, will be notified in real-time. This function helps to remove a system error at earlier stage and avoid troubles.

IMPORTANT

- For notes on ServerView security, refer to "●Security" in "1.1.7 Note" in the "ServerView User's Guide".

■ Importance of monitoring the server with ServerView

For safe operation of PRIMERGY, perform monitoring of the server using ServerView for sure. Even if the server is operating with a redundancy configuration, overlooking or neglecting errors could result in a system stop or data loss. As soon as one constituent part of the redundancy configuration fails, the corresponding countermeasures must be taken. For that reason, monitoring the server with ServerView is necessary.
If ServerView is not installed, the following serious problems may occur.

● RAID error monitoring

ServerView notifies users of the RAID errors. In an environment where ServerView is not in use, any errors will be notified. Leaving the RAID error unsolved may lead to a system stop caused by multiple hard disk unit malfunctions.

● Memory monitoring

ServerView monitors the memory. In an environment where ServerView is not in use, a memory single-bit error cannot be detected during operation. The server must restart as those errors are detected with using the BIOS Setup Utility or Server Management Tools. Leaving this error unsolved may develop to multiple-bit errors and cause a system stop.

● Fan monitoring

ServerView monitors the fan function. In an environment where ServerView is not in use, fan malfunction (failure/stop) cannot be detected during operation. The server must restart as those errors are detected with using the BIOS Setup Utility or Server Management Tools. Leaving the malfunction unsolved may lead to overheating inside the server and a system stop.

● Temperature monitoring

ServerView monitors the temperature. In an environment where ServerView is not in use, the increasing temperature inside the server, caused by such as the fan malfunction described above, cannot be detected to prevent a system failure. The server must restart as those errors are detected by using the BIOS Setup Utility or Server Management Tools.

- **Voltage monitoring**

  ServerView monitors the voltage. In an environment where ServerView is not in use, voltage surge cannot be detected during operation. The server must restart as those errors are detected by using the BIOS Setup Utility or Server Management Tools. Voltage surges may result in malfunction or data loss.

- **Power supply monitoring**

  ServerView monitors the power supply. In an environment where ServerView is not in use, power supply irregularities cannot be detected during operation. The server must restart as those errors are detected by using the BIOS Setup Utility or Server Management Tools. System stops due to power supply failures cannot be prevented.

5.2.1 Installing ServerView

- **When installed using ServerStart**

  When the OS has been installed using ServerStart, ServerView has been also installed together with the OS as well as other high reliability tools.

- **When installed manually (Linux)**

  ServerView cannot be installed using ServerStart. To install ServerView manually on a Linux system, refer to "Chapter 2 Installation" in "ServerView User's Guide".

IMPORTANT

- Be sure to install SNMP service before installing ServerView.

■ When an error screen appears after ServerView installation (Windows Server 2003 only)

If Windows Server 2003 Service Pack 1 is applied, the following message may appear on restarting immediately after installing/uninstalling ServerView.

```
In order to protect the computer, this program is terminated by
Windows.
Name: SNMP Service
```

This message does not imply an error. Click [Close Message] to close the message.

5.2.2 Setting Required after Installation

Perform necessary operations after ServerView installation referring to "2.4 Setting after Installation" in "ServerView User's Guide".

■ Boot monitoring setting

It is recommended to enable the "Boot Monitoring" function after ServerView is installed. For setting procedures and explanation on the function, refer to "[Restart Settings] Tab" of "3.4 Serious Error Handling (ASR)" in "ServerView User's Guide".

5.3 Maintenance Support Tool [HRM/Server]

HRM/server supports quick and proper maintenance operation to achieve high server operation stability.

5.3.1 Installing HRM/Server

- **When installed using ServerStart**

  When the OS has been installed using ServerStart, HRM/server has been also installed together with the OS as well as other high reliability tools.

- **When installed manually (Linux)**

  HRM/server cannot be installed using ServerStart.
  To install HRM/server manually into a Linux system, refer to "HRM/server for PRIMERGY (Windows/Linux)" at the following location of the PRIMERGY Startup Disc.
  [CD/DVD drive]:\PROGRAMS\Japanese2\HRM\iasv_hrm_install_en.pdf

IMPORTANT

- It is necessary to install ServerView to use HRM/server.

5.3.2 How to use

For system requirements for HRM/server or usage information, refer to "HRM/server for PRIMERGY (Windows/Linux)" at the following location of PRIMERGY Startup Disc.
[CD/DVD drive]:\PROGRAMS\Japanese2\HRM\iasv_hrm_install_en.pdf

5.4 Solving Problems Early [DSNAP]

DSNAP is a tool for collectively acquiring failure investigation information such as server environment information.

POINT

OS installation using ServerStart

- When the OS has been installed using ServerStart, DSNAP has been also installed together with the OS as well as other high reliability tools.

5.4.1 Installing DSNAP

Copy the following file stored in the PRIMERGY Startup Disc into the server's hard disk.

- For Windows Server 2008/Windows Server 2003 (64-bit)
  [CD/DVD drive]:\PROGRAMS\Japanese\DSNAP\x64\DSNAP.EXE
- For Windows Server 2008/Windows Server 2003 (32-bit)
  [CD/DVD drive]:\PROGRAMS\Japanese\DSNAP\x86\DSNAP.EXE

5.4.2 How to Use

Refer to the following file stored in the PRIMERGY Startup Disc. Use a text editor to open it.
[CD/DVD drive]:\PROGRAMS\Japanese\DSNAP\README_EN.TXT

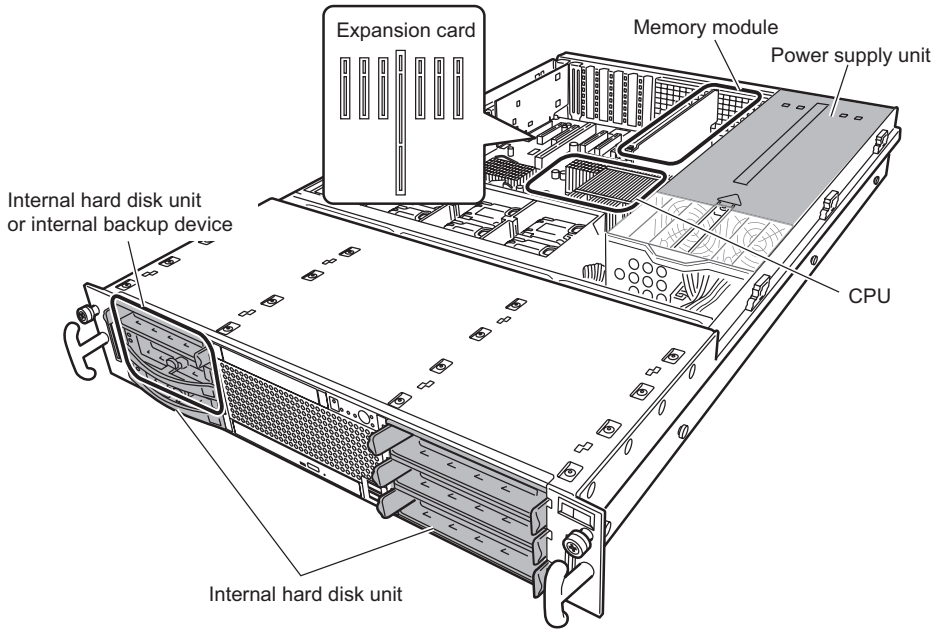
Chapter 6

Installing Internal Options

This chapter explains how to install internal options.

6.1 Before Installing Internal Options

The following types of internal options can be installed on this server.



POINT

- When re-installing internal options, make sure to use the removed screws for the same device at the same location where it was last installed. Failure to do so may damage the device.
- For stable use of the server, use the devices described in the system configuration figure when adding optional devices (internal/external options and USB devices etc.). Fujitsu does not warrant operation of the server when using unauthorized third party optional devices.
- The types of installable options described in this manual are subject to change without notice.

WARNING

Electric Shock

- Before installing/removing internal options to/from the server, turn off the server, all peripheral devices, and any other connected devices. Also unplug all power cables from the server. Failure to do so may cause electric shock (→"1.4.3 Turning Off the Server" (p.32).
  When an array system is configured (RAID1, RAID1+0, RAID5, and RAID6), internal hard disk units can be replaced without shutting down the server.
- Do not disassemble the PSU. Doing so may cause electric shock.

Do not

- Do not install unauthorized third party internal options.
  Doing so may cause a device failure, fire, or electric shock.
- Do not damage or modify internal cables or devices.
  Doing so may cause a device failure, fire, or electric shock.

⚠CAUTION

- Devices inside the server remain hot after shutdown. Wait for a while after shutdown before installing or removing internal options.
- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity.
  Before handling them, first touch a metal part of the server to discharge static electricity from your body.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.
- If devices are installed or disassembled using methods other than those outlined in this chapter, the warranty will be invalidated.

6.2 Attaching/Removing Each Cover

When installing internal options, remove the top cover and fan duct. See below how to remove each cover.

WARNING Electric Shock

- Before attaching/removing the top cover and fan duct, turn off the server and all peripheral devices. Also unplug all power cables from the server (→"1.4.3 Turning Off the Server" (p.32)). Failure to do so may cause electric shock.

- Use stabilizers to prevent the rack from tipping when installing the rack. Pulling the server out of the rack without installing stabilizers may cause the rack to tip over.

6.2.1 How to Remove the Top Cover

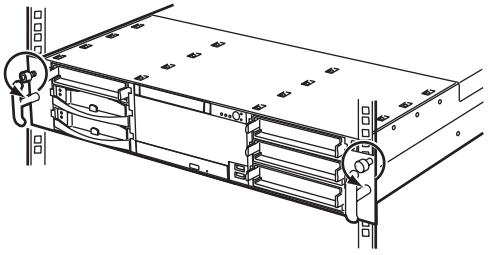
1 Open the rack door.

→"1.4.1 Opening the Rack Door" (p.29)

2 Turn off the server and all peripheral devices. Also unplug all cables from the server.

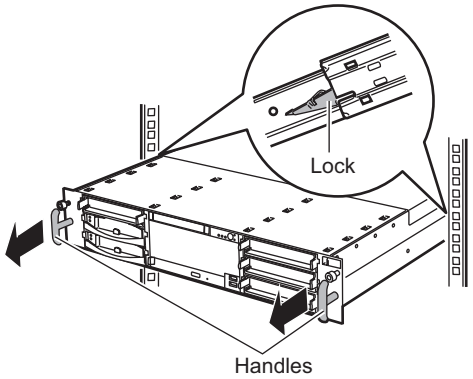
→"1.4.3 Turning Off the Server" (p.32)

3 Loosen the screws that hold the server to the rack.



4 Slide out the server.

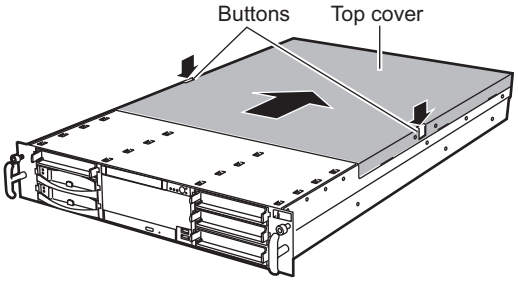
Hold the handle and slide out the server until it clicks, and the server is locked on the rail on both sides.



⚠CAUTION

- Be careful not to pinch fingers or clothes when sliding out the server or pushing it back. Failure to do so may cause injury.

5 Slide back the top cover while pushing the button on both sides.



6 Slowly lift up the top cover and remove it from the server.

■ How to attach the top cover

⚠CAUTION

- Before attaching the top cover, make sure no unnecessary parts or tools are left inside the server.
- When turning on the server, make sure the top cover is closed.

To attach the top cover, reverse the removing procedure.

6.2.2 How to Remove the Fan Duct

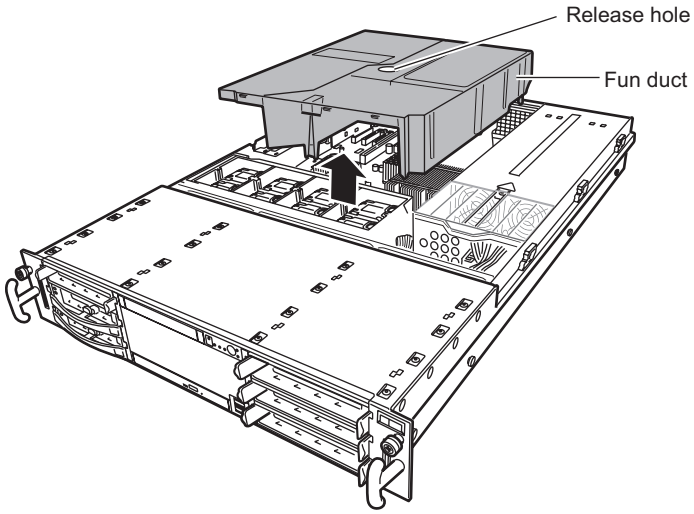
1 Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.

→"6.2.1 How to Remove the Top Cover" (p.136)

2 Touch a metal part of the server to discharge static electricity.

3 Remove the fan duct.

Remove by inserting your finger into the release hole in the center of the fan duct.



■ How to attach the fan duct

To attach the fan duct, reverse the removing procedure.

6.3 Installing the CPU

Up to two CPUs can be installed on this server by installing an optional CPU.

WARNING Electric Shock

- Before installing/removing the CPU, turn off the server and all peripheral devices. Also unplug all power cables from the server (→"1.4.3 Turning Off the Server" (p.32)). Failure to do so may cause electric shock or device failure.

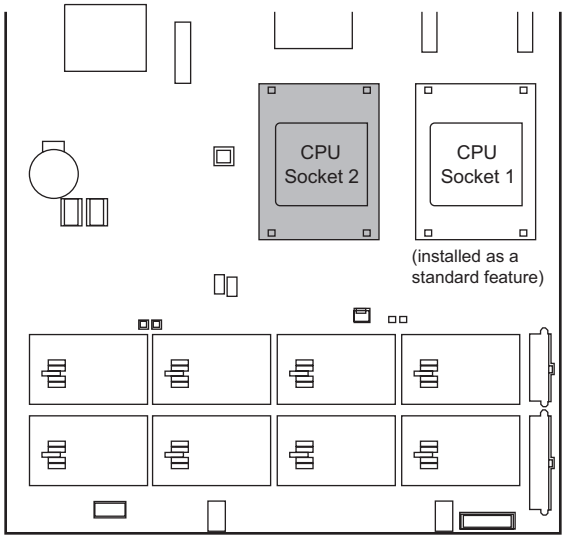
CAUTION

- Do not install any unauthorized third party optional CPU. Doing so may cause a device failure.
- Do not use a CPU with a different frequency/cache size. In that case the system will not start.

- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Before handling them, first touch a metal part of the server to discharge static electricity.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.

6.3.1 Installation Location of CPUs

The server comes equipped with one CPU in CPU socket 1. When adding an optional CPU, install it in CPU socket 2.



[Front]

6.3.2 Installable CPUs and Notes

■ Installable CPUs

The following types of CPUs can be installed on this server. When installing an optional CPU, the two CPUs must have the same product name (same frequency/cache size).

table: List of Installable CPUs

Product name	Product ID
Processor Xeon E5205 (1.86GHz)	PG-FG42G
Processor Xeon X5260 (3.33GHz)	PG-FG42H
Processor Xeon X5270 (3.50GHz)	PG-FG42N
Processor Xeon E5405 (2GHz)	PG-FG42J
Processor Xeon E5420 (2.50GHz)	PG-FG42K
Processor Xeon X5460 (3.16GHz)	PG-FG42L
Processor Xeon X5470 (3.33GHz)	PG-FG42M

POINT

- Before installing an optional CPU, see "Appendix B.1 CPU" (→p.246) to check the packaged product.

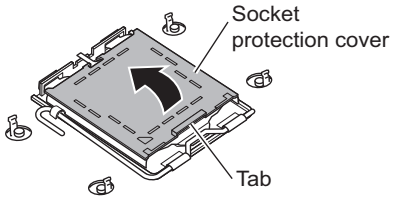
6.3.3 How to Install a CPU

1. Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.
→"6.2.1 How to Remove the Top Cover" (p.136)

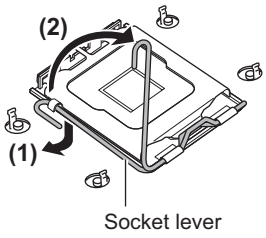
2. Touch a metal part of the server to discharge static electricity.

3. Remove the fan duct.
→"6.2.2 How to Remove the Fan Duct" (p.138)

4. Remove the socket protection cover by pulling the tab up.

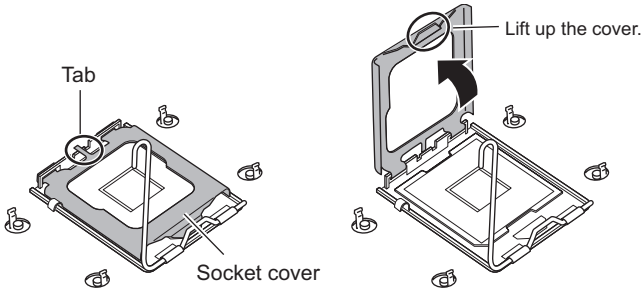


5 Move the socket lever sideways and slowly move it up.



6 Open the socket cover.

Press the socket cover tab with an index finger to open it.
Do not touch any parts other than the socket cover at this time.

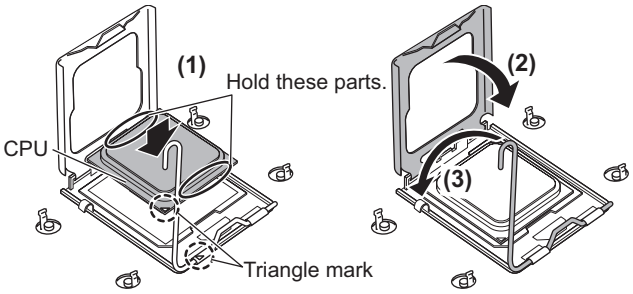


⚠CAUTION

- When opening the socket cover, be careful not to bend the CPU socket pin. Doing so may cause failures.

7 Install the CPU.

1. Align the No.1 pin mark (a small triangle) of the CPU socket with the triangle mark of the CPU, and install the CPU.
   Hold the parts shown in the ellipses on the CPU in the following figure, align the markings and carefully insert the CPU.
2. Close the socket cover.
3. Restore the socket lever and secure the CPU to the CPU socket.

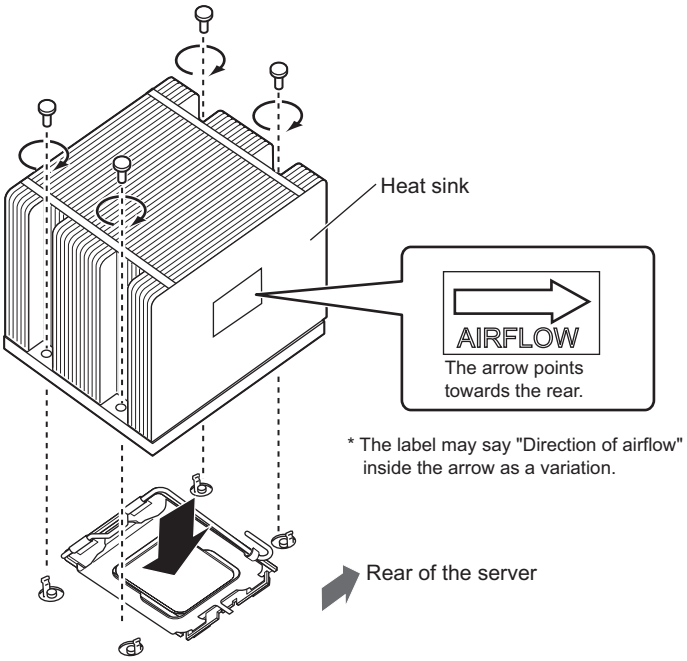


⚠CAUTION

- Do not touch the CPU electrode. Doing so may cause a failure.
- When installing the CPU, be careful not to bend the CPU socket pin.

8 Install the heat sink.

Check the direction by referring to the label attached to the heat sink, and install it on the CPU with screws to secure it.
Tighten the screws little by little diagonally.



9 Reattach the fan duct.

→"■ How to attach the fan duct" (p.138)

10 Attach the top over and push the server back into the rack.

→"■ How to attach the top cover" (p.137)

11 Initialize the Extended System Configuration Data (ESCD).

Set [Reset Configuration Data] to [Yes] in the [Advanced] menu of the BIOS Setup Utility.
→"7.2.5 Advanced Menu" (p.190).

12 Save the BIOS configuration data.

→"4.3 Storing the System Configuration Information" (p.84)

■ How to remove the CPU

To remove the CPU, reverse the installation procedure.

6.3.4 Defective CPU Disconnection Function

This server has a defective CPU disconnection function.
This function disconnects the CPU judged to be defective (causing an error) during Power On Self Test (POST) and start the server. When two CPUs are installed and one of them is defective, the server starts with the other CPU.
You can check the defective CPU on the POST screen.
If a defective CPU is discovered, replace it, and then restart the server.

■ Removing the defective CPU

1. Turn on the server and check the location of the defective CPU by the message displayed during POST.

2. Replace the defective CPU with a new CPU according to "6.3.3 How to Install a CPU" (→p.140).

3. Turn on the server and start the BIOS Setup Utility.
→"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

4. Select [CPU Status] on the [Server] menu and check that the item corresponding to the replaced CPU is set to [Enabled].
If it is set to [Failed] or [Disabled], change the status to [Enabled].
→"7.2.14 CPU Status Submenu" (p.204)

POINT

- If the setting is not changed to [Enabled], the server will start with the new CPU still marked as defective and always disconnected. By changing the setting to [Enabled], the defective CPU status is cancelled and the new CPU can be used at the next start of the server.

6.4 Installing Memory Modules

Additional memory modules will help increase the amount of data that can be read at a time and improve the server processing capability.

WARNING

- Before installing or removing memory modules, turn off the server and all peripheral devices. Also unplug all power cables from the server. Failure to do so may cause electric shock (→"1.4.3 Turning Off the Server" (p.32)).
- Do not install unauthorized third party memory modules. Doing so may cause electric shock, a fire, or failures.

CAUTION

- Wait for a sufficient period of time after server shutdown before installing or removing memory modules. Failure to do so may cause burns.

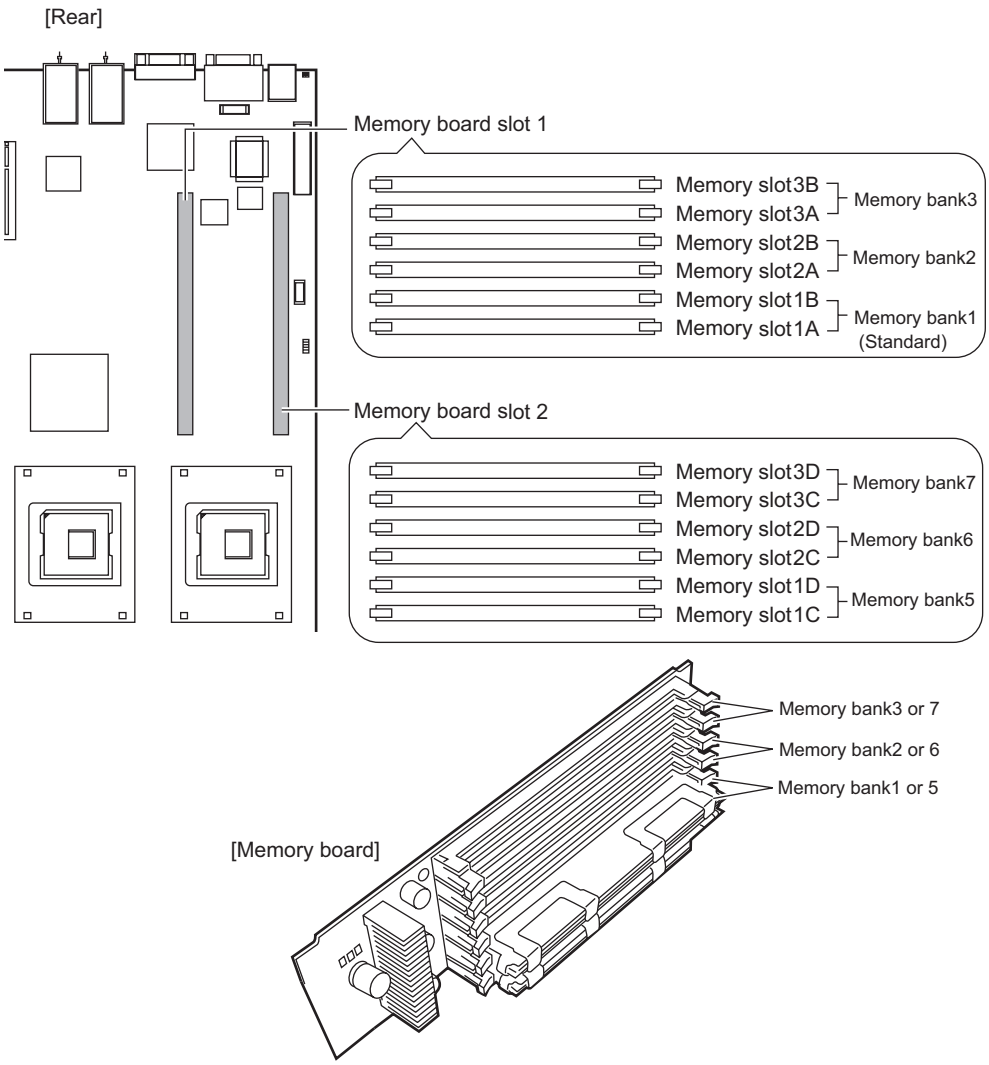
- When installing or removing memory modules, make sure to remove the screws at the specified points only. Failure to do so may cause injury. It may also cause failures.

- Touch only the specified part of the printed circuit board.
  Failure to do so may cause injury. It may also cause failures.

- A memory module consists of parts that are very vulnerable to damage by static electricity, and can easily be damaged by static electricity in the human body. Before handling memory modules, first touch a metal part of the server to discharge static electricity.
- Do not insert and remove memory modules repeatedly. Doing so may cause failures.
- Do not touch the circuitry on boards and soldered parts. Hold the metallic areas or the edge of the circuit boards.

6.4.1 Installation Locations of Memory Modules

The memory modules installed in this server are composed of two Dual In-Line Memory Modules (DIMM), the two DIMMs are configured as one pair.
Installing memory modules in the slots of the memory board and then install the memory boards in the memory board slots on the baseboard.



■ Installation order

● When installing two memory boards

Pair memory modules with the same capacity in a memory bank, and install the memory modules in ascending order of memory capacity from memory bank 1 – memory bank 5 – memory bank 2 – memory bank 6 – memory bank 3 – memory bank 7.

- **When installing one memory board**

  Pair memory modules with the same capacity in a memory bank, and install the memory modules in ascending order of memory capacity from memory bank 1 – memory bank 2 – memory bank 3.

6.4.2 Installable Memory Board/Memory Modules, and Notes

■ Installable memory board/memory modules

The following types of memory board/memory modules can be installed on this server.

table: List of installable memory board/memory modules

Product name	Product ID	Remarks
Memory Expansion Board	PG-RB108	Memory board option
Memory Module -1GB	PG-RM1CG	DDR2-667 FBD 512MB × 2
Memory Module -2GB	PG-RM2CG	DDR2-667 FBD 1GB × 2
Memory Module -4GB	PG-RM4CG	DDR2-667 FBD 2GB × 2
Memory Module -8GB	PG-RM8CG	DDR2-667 FBD 4GB × 2

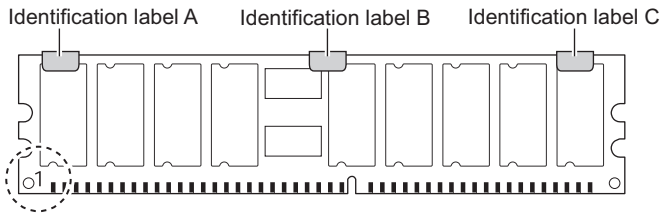
POINT

- Before installing option memory modules, see "Appendix B.2 Memory" (→p.247) and "B.3 Memory Board" (→p.247) to check the packaged products.

■ How to identify a memory module

Make sure that the two memory modules (DIMMs) in each set have the same number beginning with "CA" (e.g. CA05946-E101) on their DIMM label.
When an identification label is attached, make sure that the two memory modules (DIMMs) in each set have the same capacity and that their identification label is attached at the same position.

- Identification label location



- Identification label patterns
  When a memory module is viewed with the corner circled in the above figure to the lower left, identification labels are applied in any of the following patterns.

table: Identification Label Patterns

Pattern	Label A	Label B	Label C
1	Not applied	Not applied	Not applied
2	Applied	Not applied	Not applied
3	Not applied	Applied	Not applied
4	Not applied	Not applied	Applied
5	Applied	Applied	Not applied
6	Applied	Not applied	Applied
7	Not applied	Applied	Applied
8	Applied	Applied	Applied

6.4.3 Memory Redundant Function

Memory redundant functions (memory mirroring function, memory sparing function) can be set in this server. This section explains installation conditions and BIOS settings.

■ Memory mirroring function

Install two memory boards and change the settings with the BIOS setup utility to use the memory mirroring function. Memory mirroring consists of memory board 1 and 2. The available memory capacity (logical capacity) is half of the physical capacity. Data is stored in memory board 1 and 2. Even if an irrecoverable memory failure occurs, OS operation will continue. After a memory failure occurs, the memory mirroring configuration cannot be maintained and the memory mirroring function is disabled.

● Installation conditions

Install memory modules that have the same capacity in the same slots of memory board 1 and 2.

● BIOS settings

After installing the memory modules, perform the following settings to enable the memory mirroring function.

1. Install the memory modules.
   →"6.4.4 How to Install or Remove Memory Modules" (p.150)
2. Start the BIOS Setup Utility.
   →"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

3 Select [Advanced System Configuration] in the [Advanced] menu, and press the [Enter] key.
→"7.2.5 Advanced Menu" (p.190)

4 Select the [Memory Redundancy] item, and press the [Enter] key.

5 Select [Mirroring], and press the [Enter] key.

6 Select [Save Changes & Exit] in the [Exit] menu and press the [F10] key.
A message confirming whether to save the BIOS setting change is displayed.

7 Select [Yes] and press the [Enter] key.
After the system restarts, the memory mirror configuration becomes effective.

■ Memory sparing function

Change settings with the BIOS setup utility to use the memory sparing function. A spare memory pair is reserved by this function without using a bank of the installed memory module. The available memory capacity (logical capacity) is two-thirds of the physical capacity.

If a recoverable memory failure occurs, the defective memory pair is replaced with the reserved memory decreasing the occurrence of irrecoverable memory failure.

● Installation conditions

Install memory modules according to the following conditions.

- Memory modules must be installed in all memory slots of a memory board. When one memory board is installed, memory bank 3 becomes the spare. When two memory boards are installed, the memory bank 3 and memory bank 7 become the spares.
- Install memory modules with the same capacity in all memory slots.

● BIOS settings

After installing the memory modules, perform the following settings to enable the memory sparing function.

1 Install the memory modules.

→"6.4.4 How to Install or Remove Memory Modules" (p.150)

2 Start the BIOS Setup Utility.

→"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

3 Select [Advanced System Configuration] in the [Advanced] menu, and press the [Enter] key.

→"7.2.5 Advanced Menu" (p.190)

4 Select the [Memory Redundancy], and press the [Enter] key.

5 Select the [Sparing], and press the [Enter] key.

6 Select [Save Changes & Exit] in the [Exit] menu and press the [F10] key.

A message confirming whether to save the BIOS setting change is displayed.

7 Select [Yes] and press the [Enter] key.

After the system restarts, the memory sparing configuration becomes effective.

6.4.4 How to Install or Remove Memory Modules

CAUTION

- After the server shutdown, memory modules remain very hot. Wait for a sufficient period of time after the server shutdown before removing memory modules. Failure to do so may cause burns.

1 Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.

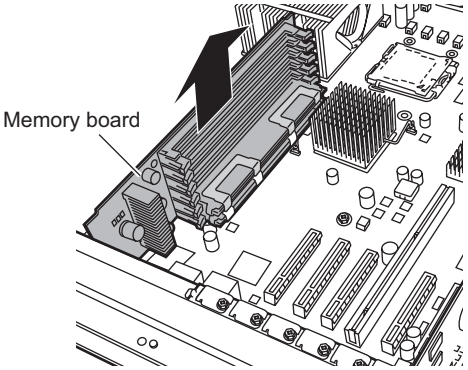
→"6.2.1 How to Remove the Top Cover" (p.136)

2 Touch a metal part of the server to discharge static electricity.

3 Remove the fan duct.

→"6.2.2 How to Remove the Fan Duct" (p.138)

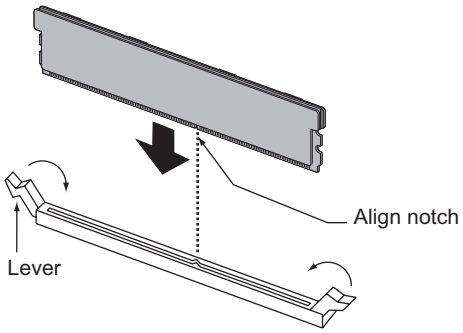
4 Remove the memory board.



5 Install or remove memory modules in the memory board.

When installing memory modules

Keep the levers on both sides of the slot where the memory module is to be installed open, and insert the memory module vertically in the memory slot while lining up the notch.
When the memory module is properly installed, the levers on both sides of the slot are pulled back. At this time, confirm that the memory module is secured. If the levers are not pulled back completely, make sure the levers are pushed inwards.

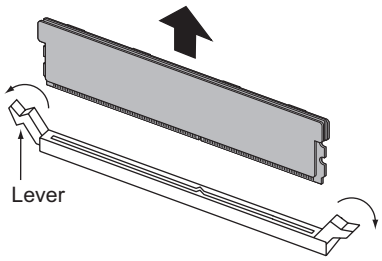


⚠CAUTION

- If the memory module has not been correctly inserted, it may cause a fire. Insert the memory module with attention to its direction.

When removing memory modules

Pull the levers on both sides of the slot outwards and remove the memory module.



⚠CAUTION

- If a memory module is installed and you pull the hook strongly outwards, the memory module pops up. Doing so may cause a device failure.

6 Install the memory board in the memory slot.

7 Attach the fan duct.

→"■ How to attach the fan duct" (p.138)

8 Attach the top cover and push the server back into the rack.

→"■ How to attach the top cover" (p.137)

9 Initialize the Extended System Configuration Data (ESCD).

Set [Reset Configuration Data] to [Yes] in the [Advanced] menu of the BIOS Setup Utility.
→"7.2.5 Advanced Menu" (p.190).

10 Save the BIOS configuration data.

→"4.3 Storing the System Configuration Information" (p.84)

6.4.5 How to Install Memory Board 2

This section explains how to add a memory module in optional memory board 2.

1 Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.

→"6.2.1 How to Remove the Top Cover" (p.136)

2 Touch a metal part of the server to discharge static electricity.

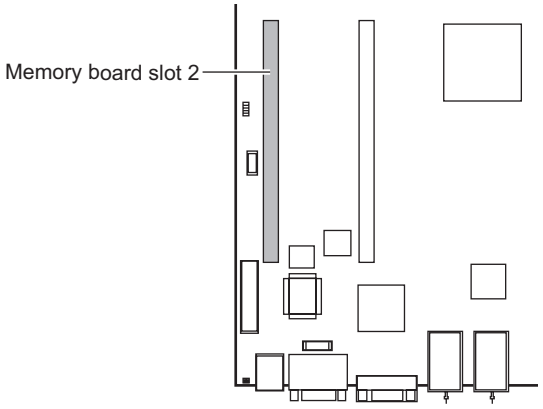
3 Remove the fan duct.

→"6.2.2 How to Remove the Fan Duct" (p.138)

4 Install/Remove memory modules from memory board 2.

Refer to Step 4 in "6.4.4 How to Install or Remove Memory Modules" (→p.150)

5 Install memory board 2 in memory board slot 2.



6 Attach the fan duct.

→"■ How to attach the fan duct" (p.138)

7 Attach the top cover and push the server back into the rack.

→"■ How to attach the top cover" (p.137)

8 Initialize the Extended System Configuration Data (ESCD).

Set [Reset Configuration Data] to [Yes] in the [Advanced] menu of the BIOS Setup Utility.

→"7.2.5 Advanced Menu" (p.190)

9 Save the BIOS configuration data.

→"4.3 Storing the System Configuration Information" (p.84)

6.4.6 Defective Memory Disconnection Function

This server is equipped with the defective memory (RAM module) disconnection function.
This function disconnects the memory bank (two DIMMs) judged to be defective (causing an error) during Power On Self Test (POST) and start the server. When POST is executed, if the memory capacity is discovered to be smaller than the capacity of the memory installed, a memory module may be defective.
You can check the slot where the defective memory module is located during POST or from the system event log.
For how to check the system event log, refer to "8.3 System Event Log" (→p.229).
If a defective memory module is discovered, replace it, and then restart the server.

■ How to replace the defective memory module

1 Refer to the system event log, and check the slot location of the defective memory module.

→"8.3 System Event Log" (p.229)

2 Replace the defective memory module with a new memory module according to "6.4.4 How to Install or Remove Memory Modules" (→p.150).

3 Start the BIOS Setup Utility

→"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

4 Select the [Memory Status] in the [Server] menu and check that the item corresponding to the replaced memory module is set to "Enabled".

If it is set to "Failed", change the memory status to "Enabled".

→"7.2.15 Memory Status Submenu" (p.205)

POINT

- When the item corresponding to the replaced memory module is not set to "Enabled", the server will start with the new memory module still marked as defective and always disconnected. By changing the setting to "Enabled", the new memory module is properly recognized and it can be used at the next start of the server.

5 Cancel the defective memory error status.

For the operation procedure, refer to the "Server View User's Guide".

6.5 Installing Expansion Cards

This section contains notes concerning types of expansion cards, various specific expansion cards, and how to install them.

⚠WARNING

- Before installing an expansion card, turn off the server and all peripheral devices, and unplug the power cables from the outlet (→"1.4.3 Turning Off the Server" (p.32)). Failure to do so may cause electric shock.

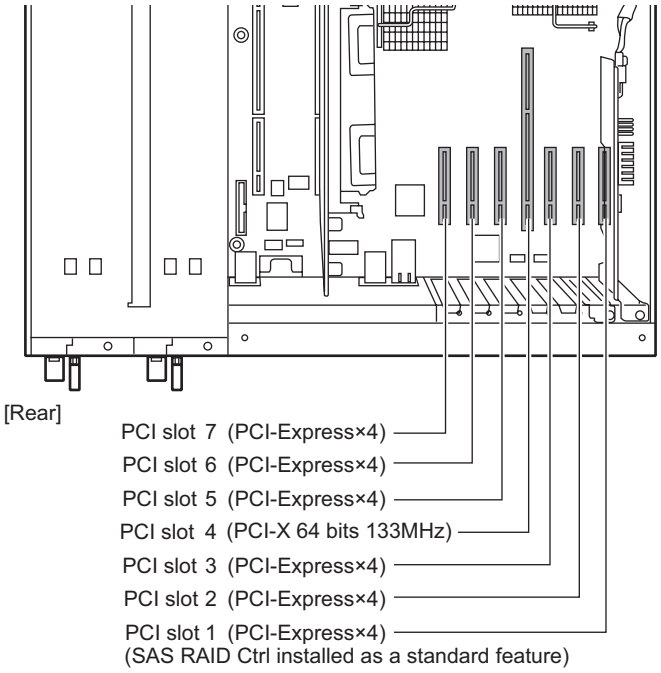
⚠CAUTION

- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity.
  Before handling them, first touch a metal part of the server to discharge static electricity.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.

- Expansion cards are susceptible to static electricity. Place them on conductive pads or keep them in their packaging as long as they are not necessary.

6.5.1 Installation Location of Expansion Cards

This server is equipped with seven PCI slots, and a maximum of seven expansion cards can be installed.



IMPORTANT

- PCI slot 1 is for SAS RAID Ctrl exclusive use.
- Slot 3 and slot 6 can be used as PCI-Express x8 slots in the following cases.
  PCI slot 3: an expansion card is not installed in PCI slot 2.
  PCI slot 6: an expansion card is not installed in PCI slot 5.

6.5.2 Installable Expansion Cards and Notes

This section explains expansion cards that can be installed in this server and notes on the installation.

■ Installable expansion cards

table: Installable expansion cards with standard installation

Product name	Product ID	Remarks
SAS RAID Ctrl	—	MegaRAID SAS, Cache capacity: 256MB (installed as a standard feature in the PCI slot 1)
SAS RAID Ctrl	PG-248CL	MegaRAID SAS, Cache capacity: 512MB, with BBU
Serial Port	PG-COM03	
Parallel Port Option	PG-PP05	
SAS RAID Ctrl	PG-244CL	for SX35, PCI-Express, with BBU
SAS RAID Ctrl	PG-248G2L	for SX35, PCI-Express, with BBU
SAS Ctrl	PG-228BL	for SX10 S2, ETERNUS2000, PCI-Express
SCSI Ctrl U320 lp	PG-2281L	Ultra320 SCSI, PCI-Express
Fibre Channel Controller	PG-FC202	PCI-Express
Eth. Ctrl 1000-BASE-SX Fibre LC lp	PG-1882L	PCI-X
Eth. Ctrl 1000-BASE-T Cu lp	PG-1892L	PCI-X
Eth. Ctrl 1x1Gbit PCI 1000-BASE-T lp	PG-1853L	PCI-X
Eth. Ctrl 2x1Gbit PCI-X 1000-BASE-T lp	PG-1863L	PCI-X, Dual Port
Eth. Ctrl 1x1Gbit PCI-E 1000-BASE-T lp	PG-289L	PCI-Express
Eth. Ctrl 1x1Gbit PCI-E 1000BASE-SX lp	PG-288L	PCI-Express
Eth. Ctrl 2x1Gbit PCI-E 1000-BASE-T lp	PG-2861L	PCI-Express, Dual Port

■ Installation location and order of expansion cards

Install each expansion card in the PCI slots in the number order described in the following table and install them according to the installation order. Expansion cards will not operate normally unless installed in the specified locations.

table: Installation location/order of expansion cards

Product name (Product ID)	PCI slot							Maximum number of installed cards		Installation order
	1	2	3	4	5	6	7			
SAS RAID Ctrl	1	–	–	–	–	–	–	1	7	1
SAS RAID Ctrl (PG-248CL)	1	–	–	–	–	–	–	1		2
Serial Port (PG-COM03)	–	–	–	–	–	–	1	1		3
Parallel Port Option (PG-PP05)	–	–	–	–	–	2	1	1		4
SAS RAID Ctrl (PG-244CL)	–	1	–	–	–	–	–	1		5
SAS RAID Ctrl (PG-248G2L)	–	1	–	–	–	–	–	1		6
SAS Ctrl (PG-228BL)	–	3	1	–	4	2	–	3		7
SCSI Ctrl U320 lp (PG-2281L)	–	1	2	–	3	4	–	1		8
Fibre Channel Controller (PG-FC202)	–	4	3	–	2	1	–	2		9
Eth. Ctrl 1000-BASE-SX Fibre LC lp (PG-1882L)	–	–	–	1	–	–	–	1		10
Eth. Ctrl 1000-BASE-T Cu lp (PG-1892L)	–	–	–	1	–	–	–			11
Eth. Ctrl 1x1Gbit PCI 1000-BASE-T lp (PG-1853L)	–	–	–	1	–	–	–			12
Eth. Ctrl 2x1Gbit PCI-X 1000-BASE-T lp (PG-1863L)	–	–	–	1	–	–	–			13
Eth. Ctrl 1x1Gbit PCI-E 1000-BASE-T lp (PG-289L)	–	5	4	–	3	2	1	4		14
Eth. Ctrl 1x1Gbit PCI-E 1000BASE-SX lp (PG-288L)	–	5	4	–	3	2	1	4		15
Eth. Ctrl 2x1Gbit PCI-E 1000-BASE-T lp (PG-2861L)	–	5	4	–	3	2	1	4		16

–: indicates that it cannot be installed

■ Notes on installing expansion cards

● Notes on individual cards

For information about specific expansion cards, refer to the manual supplied with the card and the notes provided with the server. Also, check the following for various expansion cards.

● Installing/Removing SCSI Ctrl U320 lp (PG-2281L) or SAS RAID Ctrl (PG-244CL, PG-248G2L)

Configuration information on the device changes by installing the SCSI Ctrl U320 lp (PG-2281L) or SAS RAID Ctrl (PG-244CL) in the server because the bridge circuits are installed in the insides of the cards.
Therefore, when adding/removing the SCSI Ctrl U320 lp (PG-2281L) after OS installation, the onboard LAN controller might be recognized by the OS as a new device.
Perform the onboard LAN settings (IP address etc.) and set software that uses the onboard LAN again after adding/removing the card.

● SAS RAID Ctrl

A battery backup unit (BBU) is provided with the SAS RAID Ctrl (PG-248G2L, PG-248CL, and PG-244CL). Make sure to install the battery backup unit.
→"6.5.4 How to Install a Battery Backup Unit (BBU)" (p.161)

● BIOS settings

Extended ROMs for the PCI slots 3 to 7 are disabled on this server. To perform the settings for the expansion card to be installed, the extended ROM setting needs to be temporarily changed to "Enabled" by the BIOS Setup Utility. The setting procedure is described below.

1 Enable the extended ROM for the slot where the target expansion card is installed.
Start the BIOS Setup Utility and change the setting of [PCI Slot n Configuration Option ROM Scan] (n is the slot number) in "■ PCI SLOTS Configuration submenu" (→p.193) under the [Advanced] menu from "Disabled" to "Enabled".

2 Select [Save Changes & Exit] in "7.2.18 Exit Menu" (→p.208) to exit the BIOS Setup Utility.

3 Perform expansion card settings by POST at restart.
For details about setting procedures, refer to the expansion card's manual.

4 Start the BIOS Setup Utility again and restore the setting changed in step 1.

● Parallel port option/Serial port option

When installing parallel port option or serial port option, connect the cable to the baseboard after installing it in the slot. For the connector location on the baseboard to connect the cable, refer to "1.3.4 Baseboard" (→p.28).

6.5.3 How to Install Expansion Cards

This section explains how to install expansion cards.

1 Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.

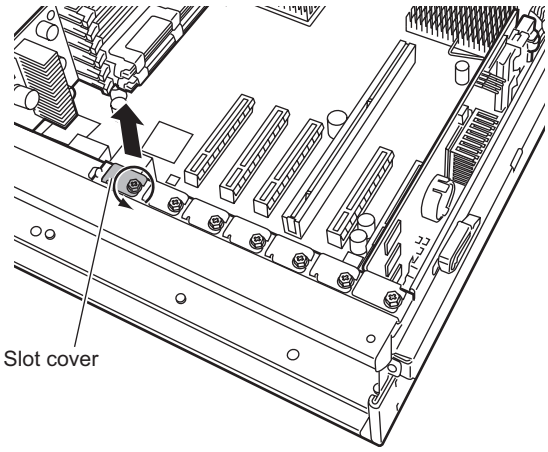
→"6.2.1 How to Remove the Top Cover" (p.136)

2 Touch a metal part of the server to discharge static electricity.

3 Remove the fan duct.

→"6.2.2 How to Remove the Fan Duct" (p.138)

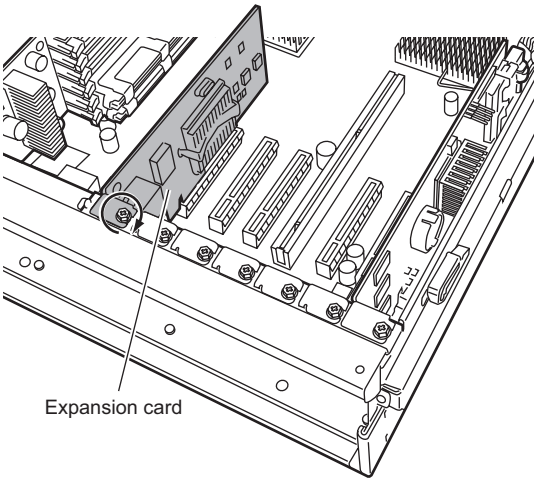
4 Remove the slot cover screw to remove the cover.



POINT

- Store the removed slot cover in a safe place.

5 Attach the expansion card to the PCI slot, and fasten it with the screw removed in Step 4.



POINT

When installing the SAS RAID Ctrl (PG-248G2L, PG-248CL, PG-244CL)

- Make sure to install the battery backup unit provided in the server and connect the battery backup unit cable.
  →"6.5.4 How to Install a Battery Backup Unit (BBU)" (p.161)

6 Attach the fan duct.

→"■ How to attach the fan duct" (p.138)

7 Attach the top cover and push the server back into the rack.

→"■ How to attach the top cover" (p.137)

■ How to remove an expansion card

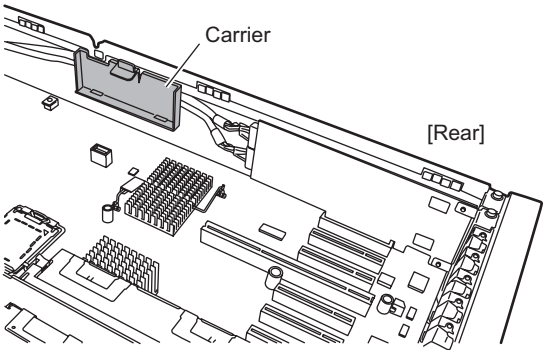
To remove expansion cards, simply reverse the installation procedures.

6.5.4 How to Install a Battery Backup Unit (BBU)

When installing the SAS RAID Ctrl (PG-248G2L, PG-248CL, PG-244CL), make sure to install the provided battery backup unit.
Installation procedure is as follows.

■ Installation location of a battery backup unit

Install the battery backup unit in the carrier location as shown below.



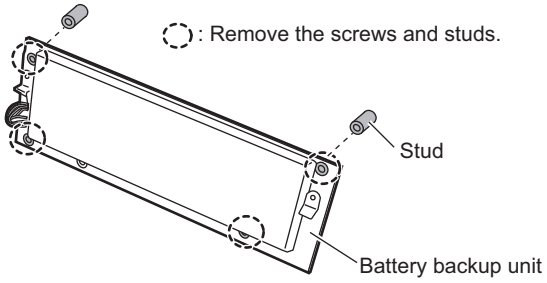
■ How to install a battery backup unit

1 Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.
→"6.2.1 How to Remove the Top Cover" (p.136)

2 Touch a metal part of the server to discharge static electricity.

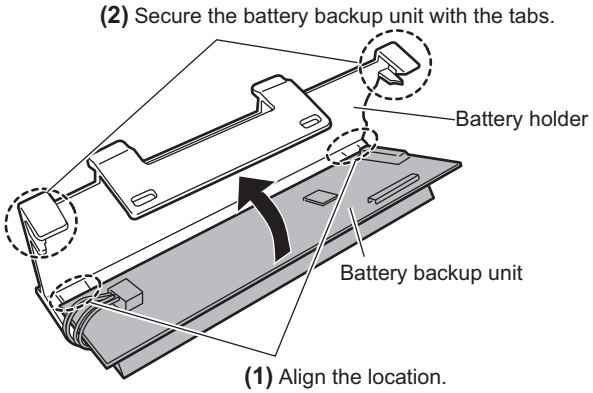
3 Remove the fan duct.
→"6.2.2 How to Remove the Fan Duct" (p.138)

4 Remove the screws (4 parts) of the battery backup unit and remove the studs.

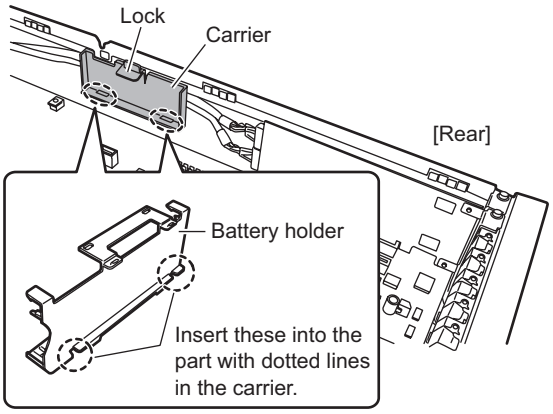


5 Install the battery backup unit in the battery holder.

Align the battery backup unit bottom with the hole location of the battery holder, insert the upper part in the tabs. It locks with a click.



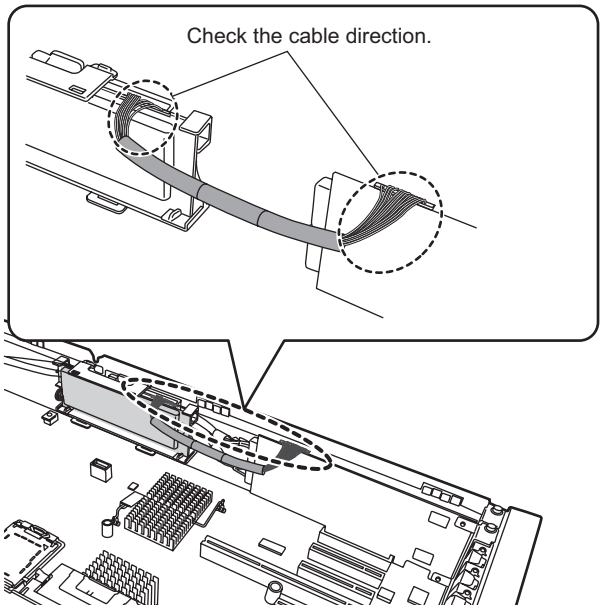
6 Install the battery holder in the server's carrier.



7 When installing two battery backup units, repeat Step 4 to 6.

8 Connect the SAS RAID Ctrl and the battery backup unit with a battery backup unit cable.

A battery backup unit cable is provided with the battery backup unit.
Connect the battery backup unit cable checking its direction.



IMPORTANT

- Do not connect the cable using excessive force, the connector is weak.

9 Attach the fan duct.

→"■ How to attach the fan duct" (p.138)

10 Attach the top cover and push the server back into the rack.

→"■ How to attach the top cover" (p.137)

IMPORTANT

- Make sure to install the Battery Recalibration after installing the battery backup unit. After installation, it is set to be executed at 11:00 a.m. on the 1st of every month. Change the setting according to the operation.
  For details, refer to the manual on the "Array Controller Documents & Tools CD".

■ How to remove a battery backup unit

To remove a battery backup unit, simply reverse the installation procedures.

● Handling batteries after removing

The battery is a nickel hydride battery (indicated as "NI-MH") or lithium-ion battery (indicated as "Li-ion"). The battery is recyclable. At the end of its useful life, under various states and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

6.6 Installing Internal Hard Disk Units

This section explains how to install internal hard disk units.

WARNING

- Before installing an internal hard disk unit, turn off the server and all peripheral devices, and unplug all power cables from the server. Failure to do so may cause electric shock (→"1.4.3 Turning Off the Server" (p.32)).
  When an array system is configured (RAID1, RAID1+0, RAID5, and RAID6), an internal hard disk unit can be replaced without shutting down the server.

CAUTION

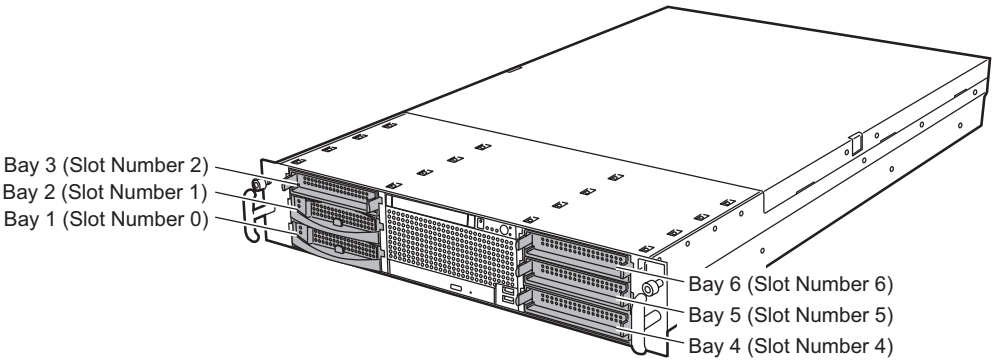
- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity. Before handling them, first touch a metal part on the server to discharge static electricity from your body.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.
- Before removing the unit, turn the power off and wait for about 30 seconds until the disk stops spinning completely.

- When the hard disk unit is starting up, you may hear a resonant noise for a while, but this does not mean a failure.
- Depending on the OS, you can configure the write cache settings for the hard disk drives. However, disable the write cache for use in this server. If the power failure should occur while the write cache is enabled, cached data may be lost.
- When disposing of, transferring, or returning a hard disk unit, wipe out the data on the drive for your own security. Contact an office listed in the "Contact Information" of "Start Guide" regarding repairs of the hard disk units.
- Rough handling of hard disk units can damage the stored data. To cope with any unexpected problems, always back up important data. When backing up data to another hard disk drive, you should make backups on a file or partition basis.
- Use the unit in a dry place with low dust levels.
- Be careful not to hit the hard disk unit or bring it into contact with metallic objects.

- Use the device on a shock and vibration free surface.
- Keep the device away from direct sunlight and from radiators or other heat sources.
- Do not use the unit in extremely hot or cold locations, or locations with extreme temperature changes.
- Never attempt to disassemble the hard disk unit.

6.6.1 Installation Locations of Internal Hard Disk Units

Install the internal hard disk unit in a 3.5-inch storage bay at the front of server. Up to six units can be installed.
When an internal backup device is installed, a maximum of four internal hard disk units can be installed.
Slot numbers that are displayed in RAID management software etc. are described in the locations where hard disk units are installed.



■ Installation order

Install the internal hard disk units in the 3.5-inch storage bays in the following order.

table: Installation order of internal hard disk units

Status of the 3.5-inch storage bay	Installation order
Standard installation	Bay 4 – Bay 5 – Bay 6 – Bay 1– Bay 2 – Bay 3
When an internal backup device is installed (using bays 2 and 3)	Bay 4 – Bay 5 – Bay 6 – Bay 1

6.6.2 Installable Internal Hard Disk Units and Notes

■ Installable internal hard disk unit

table: List of installable hard disks

Product name	Product ID	Remarks
HDD SAS 15k 73GB hot plug 3.5inch	PG-HDB75A	73.4GB, 15,000rpm, SAS 3.5-inch, hot plug support
HDD SAS 15k 147GB hot plug 3.5inch	PG-HDB45A	146.8GB, 15,000rpm, SAS 3.5-inch, hot plug support
HDD SAS 15k 300GB hot plug 3.5inch	PG-HDB35A	300GB, 15,000rpm, SAS 3.5-inch, hot plug support

POINT

- Before installing an internal hard disk unit, see "Appendix B.4 Internal Hard Disk Units" (→p.248) to check the packaged contents.

■ Replacing defective internal hard disk units (for array configuration only)

When an array system is configured, if one hard disk unit fails, you can replace it and perform recovery functions without turning off the power of the server and peripheral devices (hot swap/hot plug support). For details, refer to the manual on the "Array Controller Documents & Tools CD".

6.6.3 How to Install Internal Hard Disk Units

1 Open the rack door.

→"1.4.1 Opening the Rack Door" (p.29)

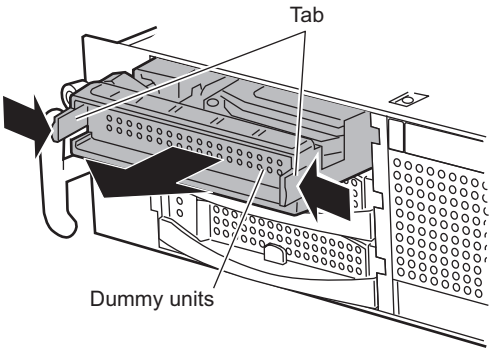
2 Turn off the server and all peripheral devices. Also unplug all power cables from the server.

→"1.4.3 Turning Off the Server" (p.32)

3 Touch a metal part of the server to discharge static electricity.

4 Remove the dummy unit from the bay where the internal hard disk unit is to be installed.

Dummy units are installed in bays where no internal hard disk units are installed. Draw forward the dummy unit slowly while pushing the tab inwards.

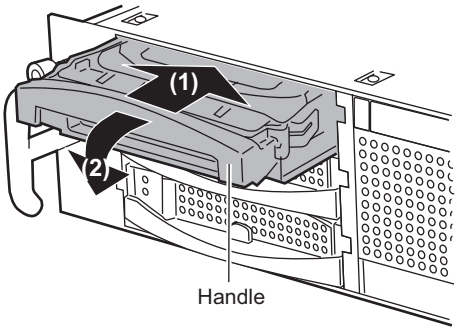


POINT

- Store the removed dummy unit in a safe place.

5 Install the internal hard disk unit.

1. Insert the internal hard disk unit in the 3.5-inch storage bay with its handle raised.
2. Insert firmly by lowering the handle.



■ How to remove internal hard disk units

1 Open the rack door.

→"1.4.1 Opening the Rack Door" (p.29)

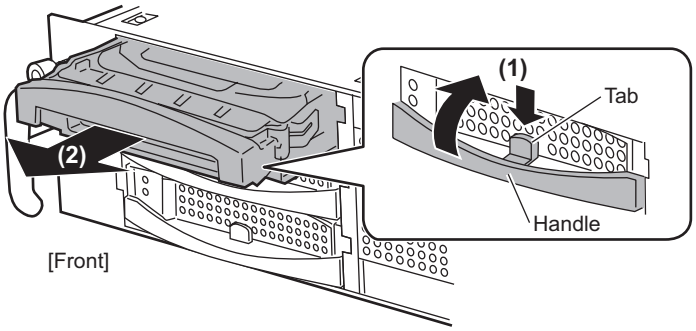
2 Turn off the server and all peripheral devices. Also unplug all power cables from the server.

→"1.4.3 Turning Off the Server" (p.32)

3 Touch a metal part of the server to discharge static electricity.

4 Remove the internal hard disk unit.

Raise the handle while pushing the tab at the front of the internal hard disk unit and draw it forward. Pull out the internal hard disk unit with both hands.



5 Install a new internal hard disk unit or a dummy unit.

→"6.6.3 How to Install Internal Hard Disk Units" (p.166)

6.7 Installing an Internal Backup Device

Internal backup device can be installed in a 3.5 inch storage bay.

WARNING Electric Shock

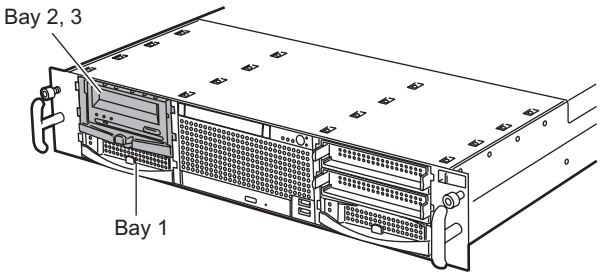
- Before installing the internal backup device, turn off the server and all peripheral devices, and unplug the power cables from the outlet. Failure to do so may cause electric shock (→"1.4.3 Turning Off the Server" (p.32)).

CAUTION

- The circuit boards and soldered parts of internal options are exposed and can be damaged by static electricity.
  Before handling them, first touch a metal part of the server to discharge static electricity.
- Do not touch the circuitry on boards or soldered parts. Hold the metallic areas or the edges of the circuit boards.

6.7.1 Installation Location of Internal Backup Device

Install the internal backup device in 3.5-inch storage bays 2 and 3.



IMPORTANT

- The maximum number of internal hard disk units that can be installed becomes four, since the internal backup device is installed in the 3.5-inch storage bay.

6.7.2 Installable Internal Backup Devices

The following internal backup device can be installed.
For details about the internal backup device, refer to the internal backup device manual.

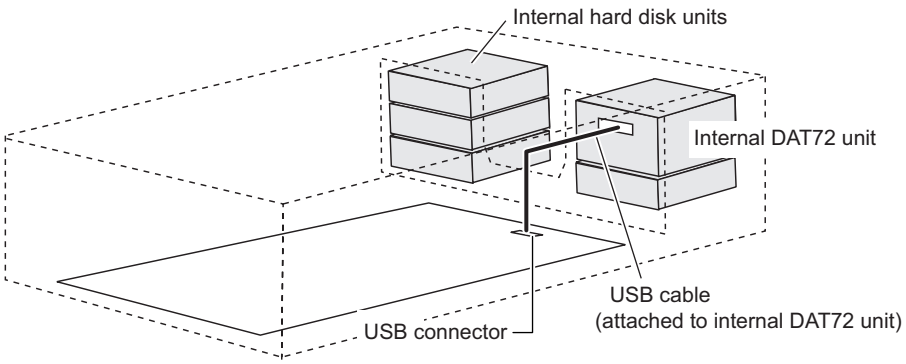
table: List of internal backup devices

Product name	Product ID	Remarks
Tape Drv DAT72 36GB internal w/ Drive Cage	PG-DT504D	Incl. an USB cable

IMPORTANT

- Internal backup device does not support hot swap and hot plug.

■ Example



6.7.3 How to Install an Internal Backup Device

1 Turn off the power and all peripheral devices, and pull the server out from the rack to remove the top cover.

→"6.2.1 How to Remove the Top Cover" (p.136)

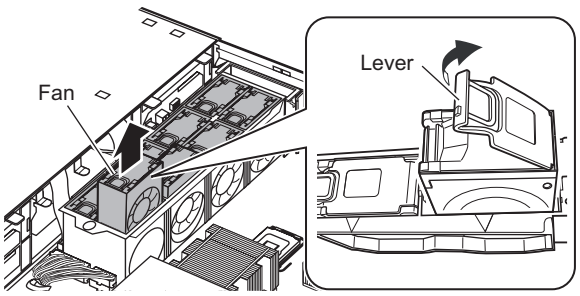
2 Touch a metal part of the server to discharge static electricity.

3 Remove the fan duct.

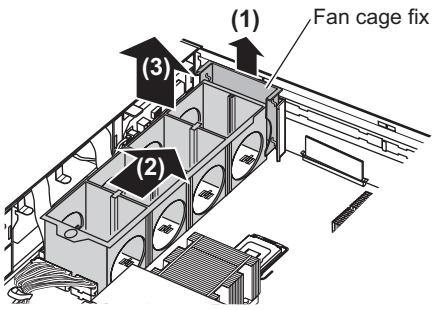
→"6.2.2 How to Remove the Fan Duct" (p.138)

4 Remove all fans and the fan cage.

1. Draw the fan's lever and raise it upwards to remove.

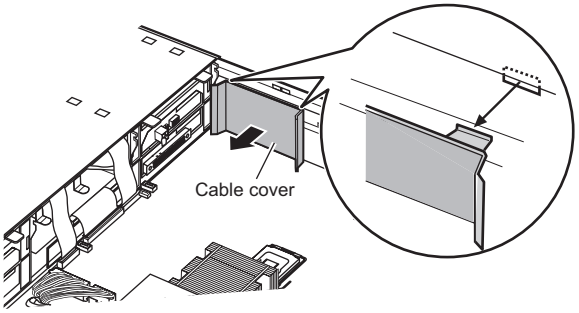


2. Draw the fixing lever of fan cage upwards, push the fan cage towards the device, and raise it upwards to remove it.



5 Remove cable cover at the side of the device.

The cable cover can be removed by pushing the two tabs at the side of the body.



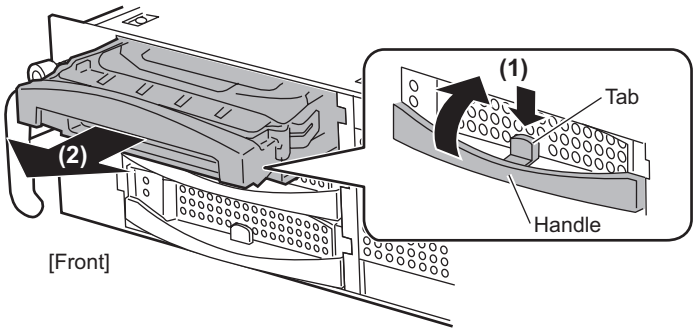
6 Remove all the internal hard disk units and the dummy units.

Remove all internal hard disk units installed in bays 1 to 6.

- Remove the internal hard disk units

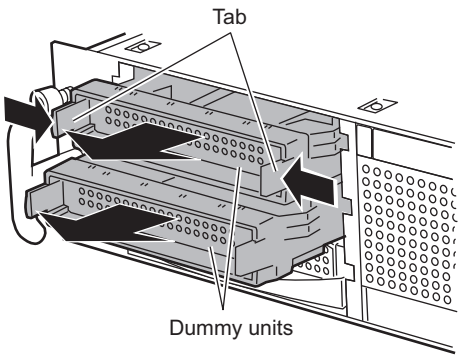
  Lift up the handle while pressing the front tab of the internal hard disk unit down, and pull it.

  Be sure to put a hand on the internal hard disk unit and pull it with both hands.



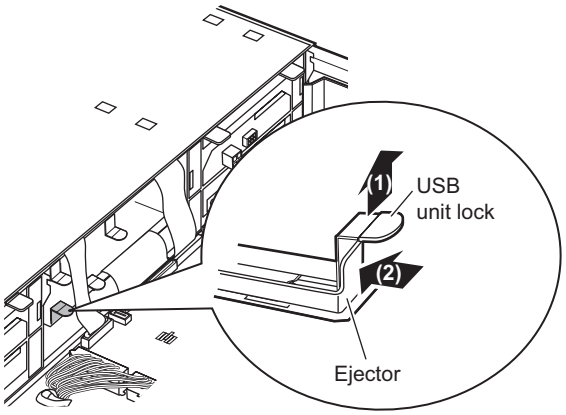
- Remove the dummy units

  Pull out the dummy units while pushing the tabs inwards.

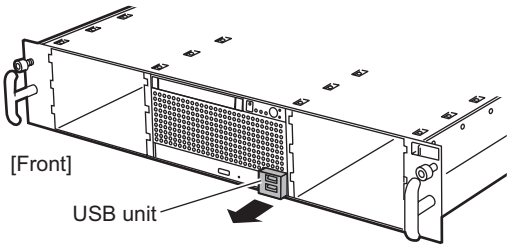


7 Remove the USB unit.

1. Push the ejector in the direction of the arrow (on the front) while holding up the USB unit lock (green) inside of the server to unlock it.

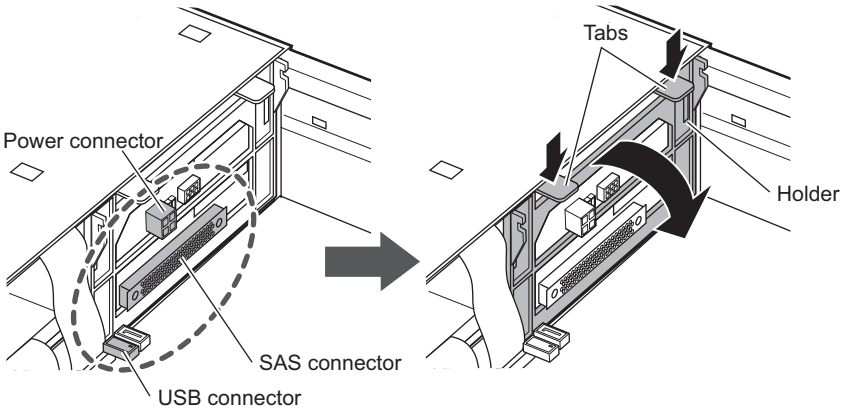


2. Remove the USB unit from the server.

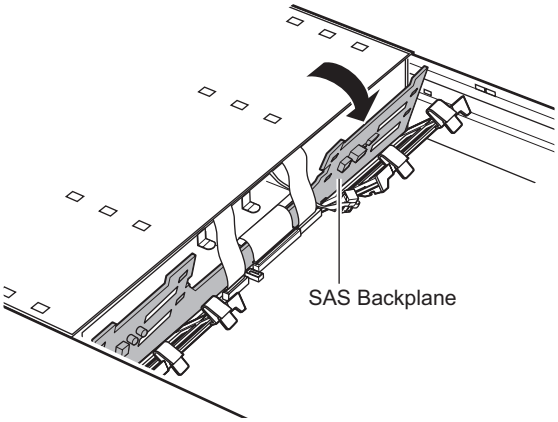


8 Remove the cables inside of the server and open the holder of the 3.5-inch storage bay while pressing the tabs.

The holders are on both sides of the server. Open both of them in the same way.

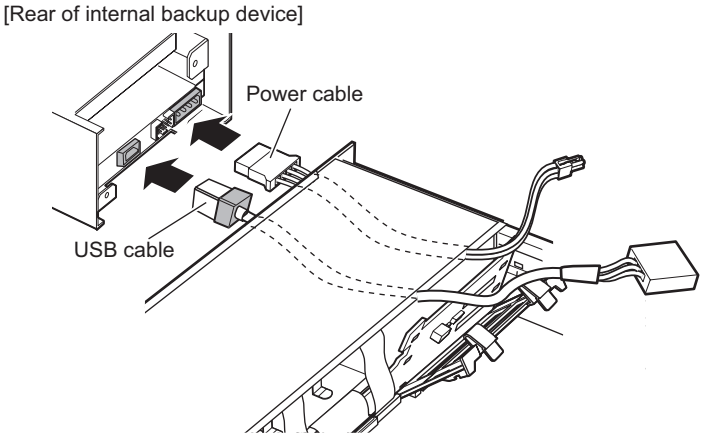


9 Tilt the rear SAS backplane towards the back.

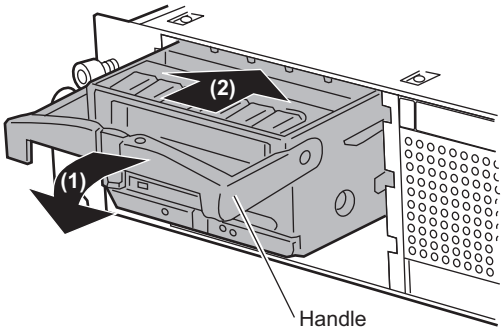


10 Install the internal backup device to bay 2 and bay 3.

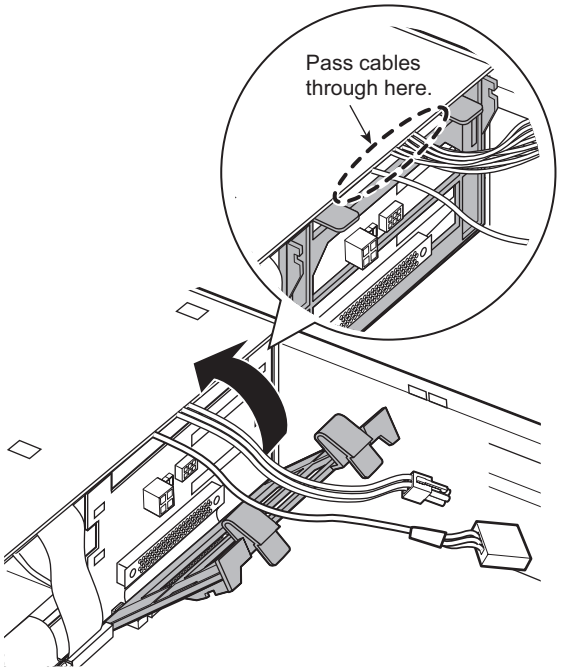
1. Connect the power cable and the USB cable to the connectors of the internal backup device and put them through the hole at the back of the 3.5-inch storage bay.



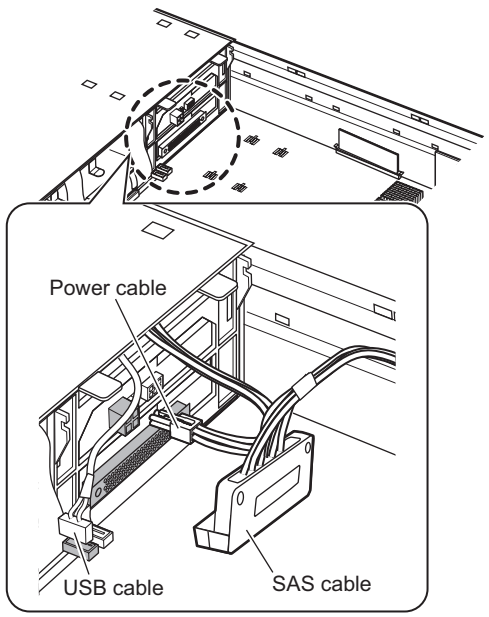
2. Insert the internal backup device with its handle raised while pulling the cable to the server inside.
3. Lower the handle, and Insert the device firmly.



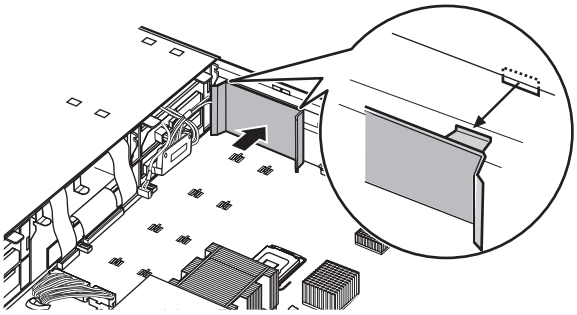
4. Turn back the SAS backplane and close the two holders at the back of the right and left 3.5-inch storage bay.



5. Connect each cable that was removed in Step 8.



11 Pull the SAS cable through the side of the device and attach the cable cover that was removed in Step 5.



12 Attach the fan cage and all the fans.

To attach them, simply perform the removal procedure in reverse.

13 Install the internal hard disk unit and the dummy units.

To attach them, simply perform the removal procedure in reverse.

14 Attach the USB unit that was removed in Step 7 to the front of the server.

Push it until it is all the way seated. It automatically locks.

15 Attach the fan duct.

→"■ How to attach the fan duct" (p.138)

16 Attach the top cover, and push the server back into the rack.

→"■ How to attach the top cover" (p.137)

■ How to remove the internal backup device

To remove the internal backup device, simply reverse the installation procedure.

6.8 Installing Power Supply Units

One power supply unit (PSU) is installed in this server by default. Up to two PSUs can be installed.
By installing two PSUs, the redundant power feature can be enabled.
This section contains notes on adding a PSU, and explains the procedures for installation, removal, and replacement.

WARNING Electric Shock

- Before installing/removing a PSU, turn off the server and all peripheral devices (→"1.4.3 Turning Off the Server" (p.32)). Also unplug the power cables from the PSU. Failure to do so may cause electric shock.
  However, when the redundant power function is supported, a defective PSU can be replaced without shutting down the server.
- Do not insert your hands in the PSU slot when removing the PSU. Doing so may cause electric shock.

CAUTION

- The PSU is heavy, so handle it carefully.
  If you drop it by mistake, injuries may result.

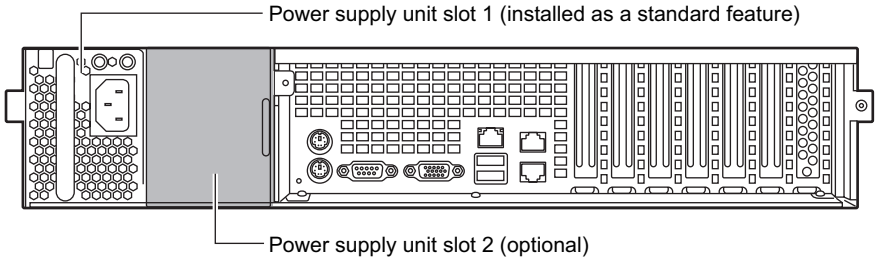
POINT

- Replace the defective PSU as soon as possible.

6.8.1 Installation Location of the Power Supply Units

Install the PSU in PSU slot 2.

[Rear]



6.8.2 Installable Power Supply Units

The following PSUs can be installed in this server.

table: Installable PSUs

Product name	Product ID
Power Supply Module	PG-PU125

6.8.3 How to Install the Power Supply Unit

This section explains how to install power supply units.

CAUTION

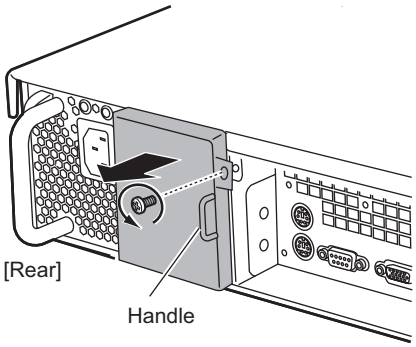
- Areas around the PSU may remain extremely hot after shutdown. Wait for a while after shutdown before removing the PSU.

1 Turn off the server and all peripheral devices. Also unplug the power cable from the inlet.

→"1.4.3 Turning Off the Server" (p.32)

2 Remove the dummy unit.

Remove the screws on the dummy unit and pull it out by the handle.

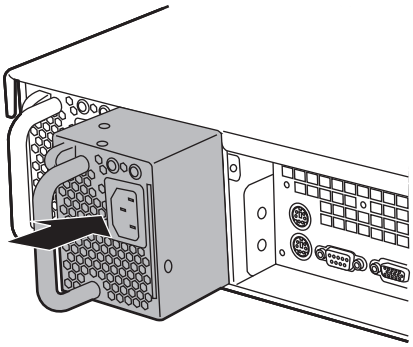


POINT

- Store the removed screws in a safe place.

3 Install the PSU.

Hold the PSU with both hands and insert it straight into the PSU slot.



IMPORTANT

- When installing the PSU, be sure to confirm that the connector of the PSU is not damaged or bent.

4 Connect the power cable to the inlet.

■ How to remove the power supply unit

CAUTION

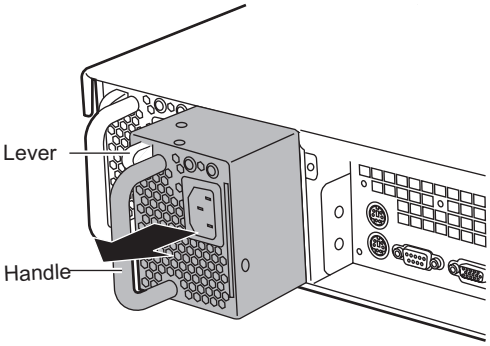
- Areas around the PSU may remain extremely hot after shutdown. Wait for a while after shutdown before removing the PSU.

1 Turn off the server and all peripheral devices. Also unplug the power cable from the inlet.

→"1.4.3 Turning Off the Server" (p.32)

2 Remove the PSU by pressing the lever.

Pull out the PSU by holding the handle with one hand and supporting the PSU with the other hand.



POINT

- If the PSU is hard to remove, do not pull out it by force. Slide the PSU all the way down once, and then remove it while holding the lever completely down.

3 Install a new PSU or dummy unit.

6.8.4 Replacing the PSU during Redundant Operation

When an optional PSU is installed and the redundant feature is enabled, if one PSU fails, the lamp (green) on the defective PSU turns off. The defective PSU can be replaced without shutting down the server.
Be sure to install a new PSU after removing the defective PSU.

1 Unplug the power cable from the failed PSU inlet.

2 Remove the defective PSU.

→"■ How to remove the power supply unit" (p.178)

3 Install a new PSU.

→"6.8.3 How to Install the Power Supply Unit" (p.177)

4 Connect the power cable to the inlet of the replaced PSU.

Chapter 7

Configuring Hardware and Utilities

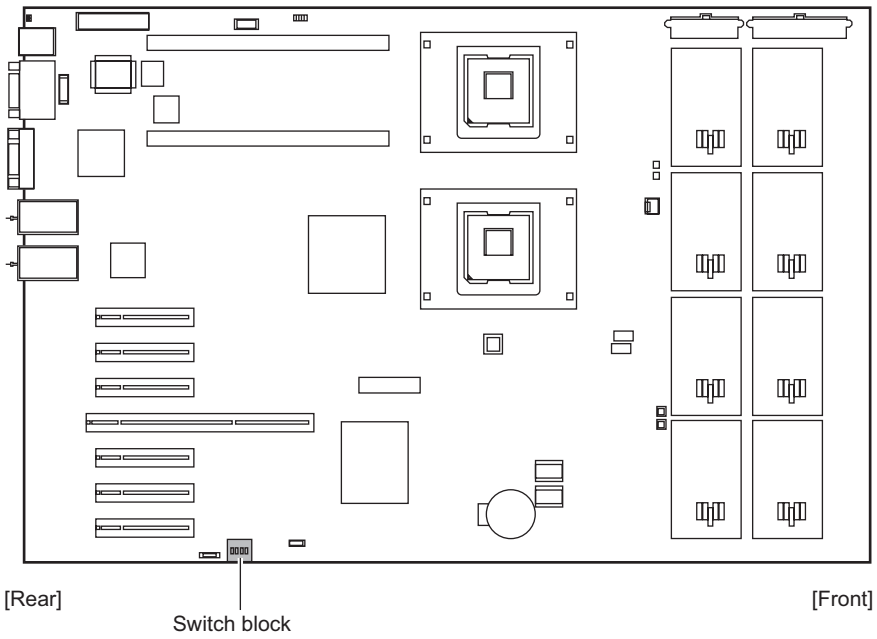
This chapter explains how to make the environment settings necessary to operate the server and how to use each utility.

7.1 Switch Block Settings

This section explains the switch block settings for this server.

■ Switch block location

The switch block is located on the baseboard as shown below.



■ Switch block settings

The switch block settings are as follows:

table: Switch block settings

Switch Number	Functions	Factory Settings	Description
1	BIOS Recovery	Off	BIOS Recovery
2	Password Skip	Off	Clears the password that was set in the BIOS.
3	BIOS Write Protect	Off	BIOS Write Protect
4	FDD Write Protect	Off	This switch is not used.

7.2 BIOS Setup Utility

This section explains how to make settings in the BIOS Setup Utility, and the items of each setting.

7.2.1 Starting and Exiting the BIOS Setup Utility

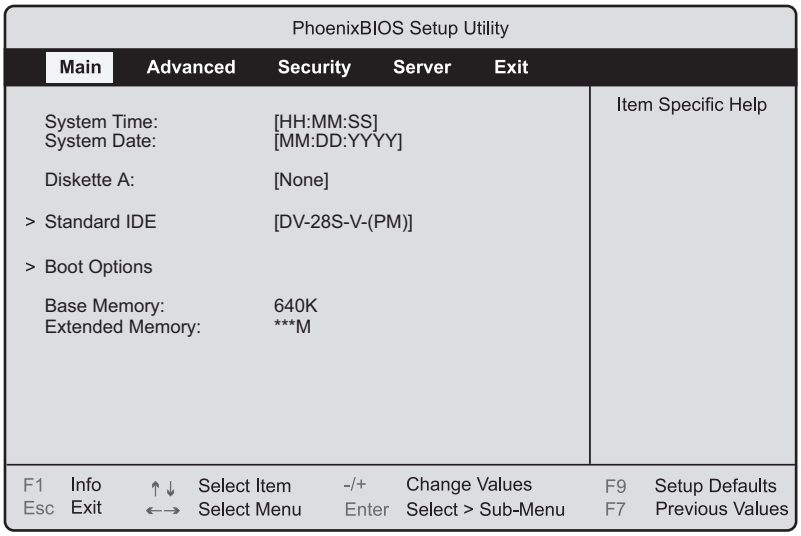
The following explains how to start and exit the BIOS Setup Utility.

■ How to start the BIOS Setup Utility

1 Turn on the server.

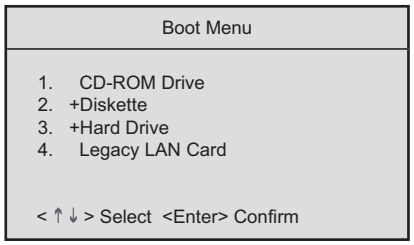
2 Press the [F2] key while the message "<F2> BIOS Setup / <F12> Boot Menu" appears on the screen during the POST phase.

The [Main] menu screen appears after the POST completes.



POINT

- The [Main] menu screen may not appear although the [F2] key is pressed. In this case, press the [Ctrl] + [Alt] + [Delete] keys simultaneously and restart the server, then start the BIOS Setup.
- If you press the [F12] key while the message "<F2> BIOS Setup / <F12> Boot Menu" is displayed on the screen, the Boot menu screen will appear after the POST completes.



● Key operations in the BIOS Setup Utility

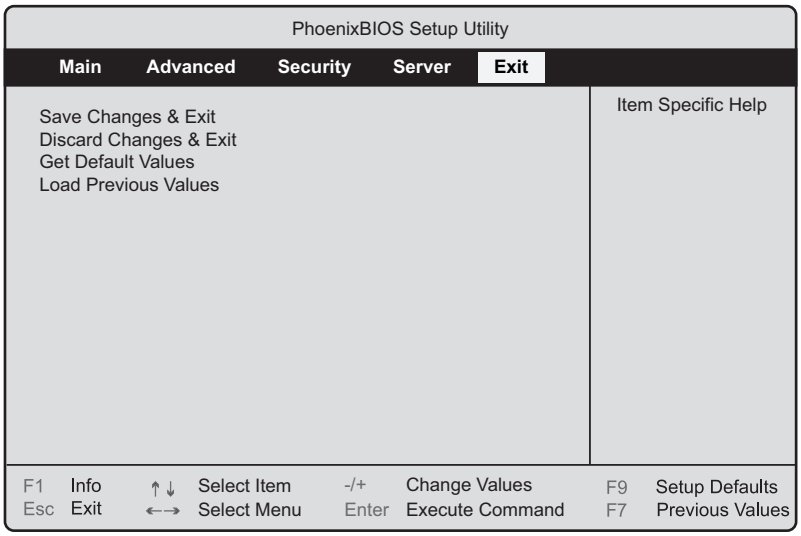
The roles of the keys used for BIOS Setup Utility settings are as follows:

table: List of key operations on the BIOS Setup Utility screen

Key	Description
[F1]	Switches the detailed information display on and off.
[Esc]	When the submenu screen is displayed, the submenu closes and the screen returns to the previous menu. When the menu screen is displayed, this utility closes.
[↑] [↓]	Scrolls through the menu option list.
[←] [→]	Switches between menus.
[-] [+]	Changes the value of an item.
[Enter]	Selects an item. For items where ▶ is displayed, a submenu appears.
[F9]	Resets each item to the default value. (The default value may vary from the value set at the time of purchase.)
[F7]	Resets an item to its previous value.

■ How to exit the BIOS Setup Utility

1 Use the [←] [→] keys to display the [Exit] menu.



2 Use the [↑] [↓] keys to select the exit mode.

To save configuration changes before exiting:

Move the cursor to [Save Changes & Exit] and press the [Enter] key.

The message "Save configuration changes and exit now?" is displayed.

To exit without saving configuration changes:

Move the cursor to [Discard Changes & Exit] and press the [Enter] key.

The message "Configuration has not been saved! Save before exiting?" is displayed.

3 Use the [←] [→] keys to move the cursor to [Yes] or [No], and press the [Enter] key.

If you selected [Save Changes & Exit]:

Select [Yes] to exit.

After saving the changed settings, the BIOS Setup Utility closes and the server restarts.

Select [No] not to exit.

The display returns to the BIOS Setup Utility window.

If you selected [Discard Changes & Exit]:

Select [Yes] to save changes before exit.

The BIOS Setup Utility closes and the server restarts.

Select [No] when not saving the settings.

The BIOS Setup Utility closes and the OS starts.

7.2.2 Main Menu

The [Main] menu is displayed initially when you start the BIOS Setup Utility.
Settings for the time and date and for the drives are configured on the [Main] menu.

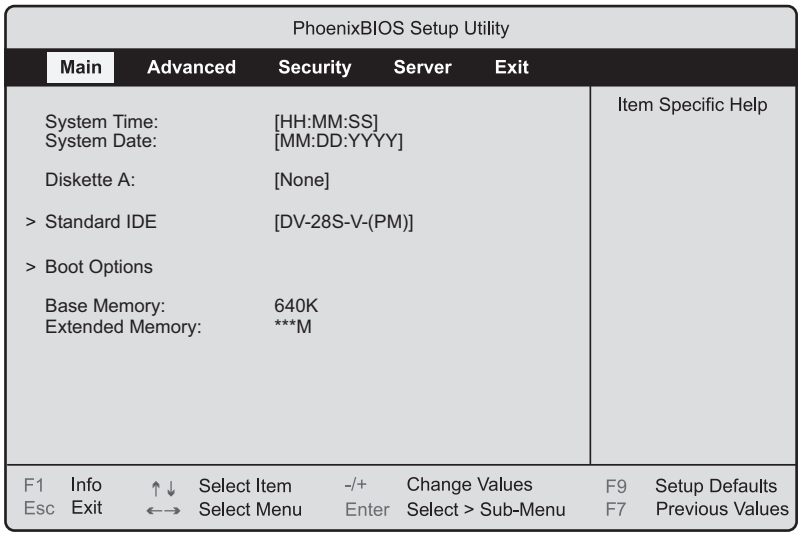


table: Items on the Main Menu

Item	Setting	Description
System Time	Present time	Sets the system time in "hh:mm:ss" format. Enter the hours in the 24-hour clock format. For example, 6:30:00 P.M. is set as "18", "30", and "00". **Note:** ▸ When a higher system time accuracy is required, apply a network-based time setting service (such as NTP) to the system configuration.
System Date	Present date	Sets the system date in "mm/dd/yyyy" format. For example, January 20, 2008 is set as "01", "20", and "2008".
Diskette A	• None (Initial value) • 360K • 1.2M • 720K • 1.4M	Sets the type of floppy drive A (recording density and drive size).
Standard IDE	Sets the type and operating mode for connected IDE devices. →"7.2.3 Standard IDE Submenu" (p.187)	
Boot Options	Sets system startup options. →"7.2.4 Boot Options Submenu" (p.188)	
Base Memory	Displays the available base memory size below 1MB.	
Extended Memory	Displays the memory size above 1MB.	

7.2.3 Standard IDE Submenu

This submenu appears when selecting [Standard IDE] from the [Main] menu.
Use this submenu to set the type and operating mode for connected IDE devices.

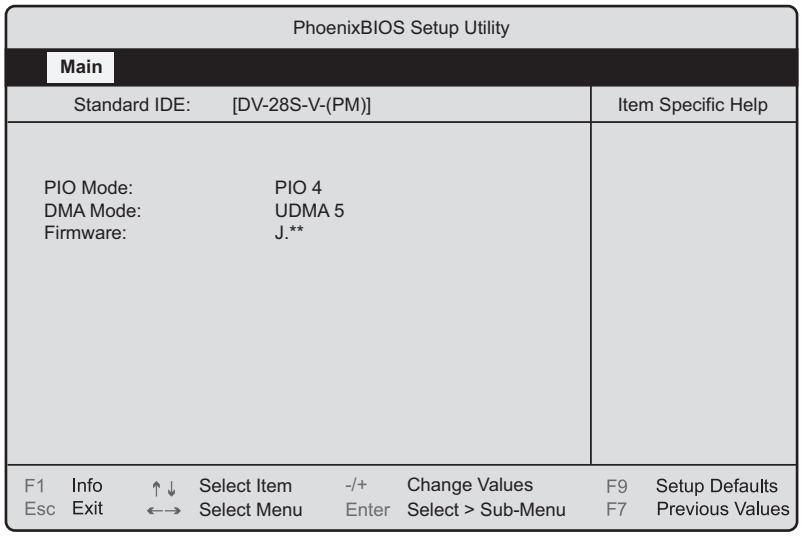


table: Items on the Standard IDE Menu

Item	Setting	Description
PIO Mode	PIO 4	Sets the data transfer mode.
DMA Mode	UDMA 5	Sets the Direct Memory Access (DMA) data transfer mode.
Firmware	J.**	Displays the firmware version.

7.2.4 Boot Options Submenu

This submenu appears when selecting [Boot Options] from the [Main] menu.
Use this submenu to set system startup options.

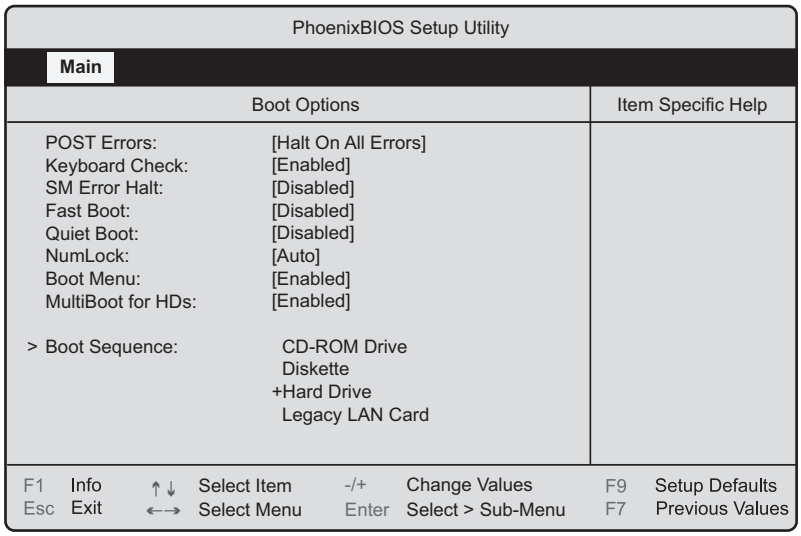


table: Items on the Boot Options Submenu

Item	Setting	Description
POST Errors	Halt On All Errors (Unchangeable)	Sets whether or not to stop the boot process and shut down the system in case a POST (Power On Self Test) error is detected. • Halt On All Errors Halts the system in case errors are detected by POST (Power On Self Test) at the time of its completion.
Keyboard Check	• Disabled • Enabled (Initial value)	Sets whether or not to have POST perform a keyboard connection confirmation.
SM Error Halt	• Disabled (Initial value) • Enabled	Sets the procedure in case a fan or temperature sensor occurs.
Fast Boot	Disabled (Unchangeable)	Sets whether or not to reduce the scope of POST and thereby speed up system startup.
Quiet Boot	Disabled (Unchangeable)	Sets whether or not to display the logo screen instead of POST information.
NumLock	Auto (Unchangeable)	Sets the state of the Num Lock key when turning the power on.

table: Items on the Boot Options Submenu

Item	Setting	Description
Boot Menu	Enabled (Unchangeable)	Sets whether or not to enable the Boot menu.
MultiBoot for HDs	Enabled (Unchangeable)	Sets whether or not to enable selection of which hard disk unit to load the OS from, when multiple hard disk units are installed.
Boot Sequence	Displays the Boot Sequence by pressing the [Enter] key. • CD-ROM Drive • Diskette • Hard Drive • Legacy LAN Card	Specifies the drives from which the OS is loaded and the precedence order of the drives. Use the [+] [-] keys to change the priority order for the selected device. Booting from the selected device can be disabled by pressing the [Space] key. (When it is disabled, [!] appears in front of the device name.) If a non-existent device appears in the list, it can be deleted by pressing the [*] key.

7.2.5 Advanced Menu

The [Advanced] menu sets the peripheral device and PCI device options.

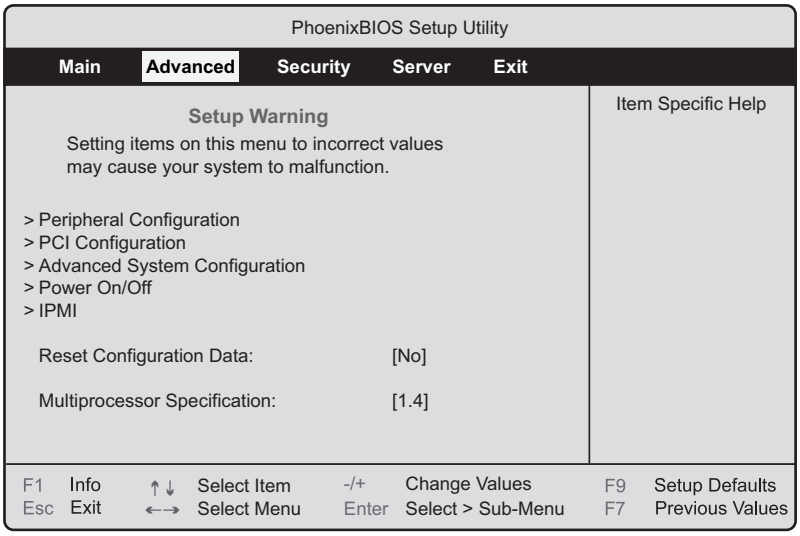


table: Items on the Advanced Menu

Item	Setting	Description
Peripheral Configuration	Configures the serial port, parallel port, etc. →"7.2.6 Peripheral Configuration Submenu" (p.191)	
PCI Configuration	Configures the PCI device. →"7.2.7 PCI Configuration Submenu" (p.193)	
Advanced System Configuration	Configures additional settings. →"7.2.8 Advanced System Configuration Submenu" (p.194)	
Power On/Off	Configures the power on/off settings. →"7.2.9 Power On/Off Submenu" (p.196)	
IPMI	Configures the integrated Remote Management Controller (iRMC) settings. →"7.2.10 IPMI Submenu" (p.197)	
Reset Configuration Data	• Yes • No (Initial value)	Configures the initialization of the Extended System Configuration Data (ESCD) that retains system resources.
Multiprocessor Specification	1.4 (Unchangeable)	Sets the version of the used multiprocessor table. The multiprocessor table is required when a multiprocessor OS detects the multiprocessor characteristics of the system.

7.2.6 Peripheral Configuration Submenu

This submenu appears when selecting [Peripheral Configuration] from the [Advanced] menu.
Sets the serial port, parallel port, etc.
The items not listed in the figure below can be displayed using the scroll bar.

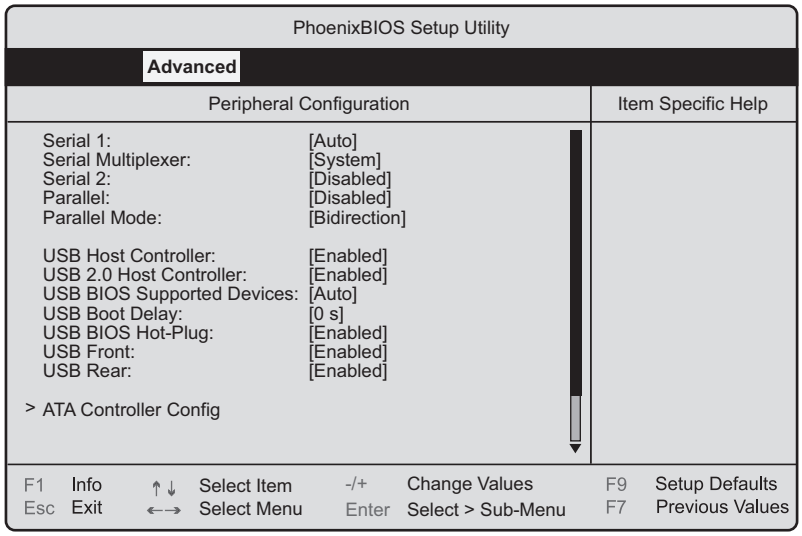


table: Items on the Peripheral Configuration Submenu

Item	Setting	Description
Serial 1	• Disabled • Enabled • Auto (Initial value) • OS Controlled	Sets whether to enable or disable the serial port. Set this to [Disabled] when used as a server management port. **Note:** ▶ When [Serial Multiplexer] is changed to [iRMC], set this item to "Disabled".
Serial 1 Address	3F8h, IRQ 4 (Unchangeable)	Appears when [Enabled] is selected for [Serial 1].
Serial Multiplexer	• System (Initial value) • iRMC	Switches the function of serial port 1. • System Uses this port as a serial port. (Setting at the time of UPS connection) • iRMC Uses this port as a server management port. In this case, set [Serial 1] to [Disabled].
Serial 2	• Disabled (Initial value) • Enabled • Auto • OS Controlled	Sets whether to enable or to disable the serial port.
Serial 2 Address	2F8h, IRQ 3 (Unchangeable)	Appears when [Enabled] is selected for [Serial 2].
Parallel	• Disabled (Initial value) • Enabled • Auto	Sets whether to enable or to disable the parallel port.

table: Items on the Peripheral Configuration Submenu

Item	Setting	Description
Parallel Mode	Bidirection (Unchangeable)	Sets the data transfer mode of the parallel port. Appears when [Enabled] or [Auto] is selected for [Parallel].
Parallel Address	• 378h,IRQ7 (Initial value) • 278h,IRQ5 • 3Bch,IRQ7	Sets the parallel port address. This item appears when [Enabled] is selected for [Parallel].
USB Host Controller	Enabled (Unchangeable)	Sets whether or not to use the USB controller (2.0 or 1.1 standard).
USB 2.0 Host Controller	Enabled (Unchangeable)	
USB BIOS Supported Devices	Auto (Unchangeable)	Sets which type of USB device should be used in BIOS.
USB Boot Delay	0 s. (Unchangeable)	Sets the waiting time for booting from a USB device.
USB BIOS Hot-Plug	Enabled (Unchangeable)	Allows Hot-Plug of the USB device used for BIOS.
USB Front	• Disabled • Enabled (Initial value)	Sets whether or not to use the USB connector on the front.
USB Rear	• Disabled • Enabled (Initial value)	Sets whether or not to use the USB connector on the back.
ATA Controller Config	Configures additional settings. →"■ ATA Controller Config submenu" (p.192)	
Diskette Controller	Disabled (Unchangeable)	Sets whether or not to enable the floppy disk controller.
Mouse Controller	Auto Detect (Unchangeable)	Sets whether or not to use the mouse connected to the mouse port.
Onboard Video	Enabled (Unchangeable)	Sets whether or not to enable the onboard video controller.
LAN Controller	LAN 1 & 2 (Unchangeable)	Sets whether or not to enable the onboard LAN controller (LAN 1, or LAN 1 & 2).
LAN 1 Remote Boot	• Disabled (Initial value) • PXE • iSCSI	Sets whether or not to load the OS from the server. This function is especially used when both floppy disk drive and hard disk drive are not installed, or both powers are turned off.
LAN 2 Remote Boot		

■ ATA Controller Config submenu

Sets the Serial ATA.

table: Items on the ATA Controller Config Submenu

Item	Setting	Description
S_ATA Mode	Compatible (Unchangeable)	Sets the Serial ATA mode.
Primary IDE Channel	Enabled (Unchangeable)	Sets whether or not to enable the Primary IDE Channel.
Secondary IDE Channel	Enabled (Unchangeable)	Sets whether or not to enable the secondary IDE Channel.

7.2.7 PCI Configuration Submenu

This submenu appears when selecting [PCI Configuration] from the [Advanced] menu.
Use this submenu to configure the PCI device.

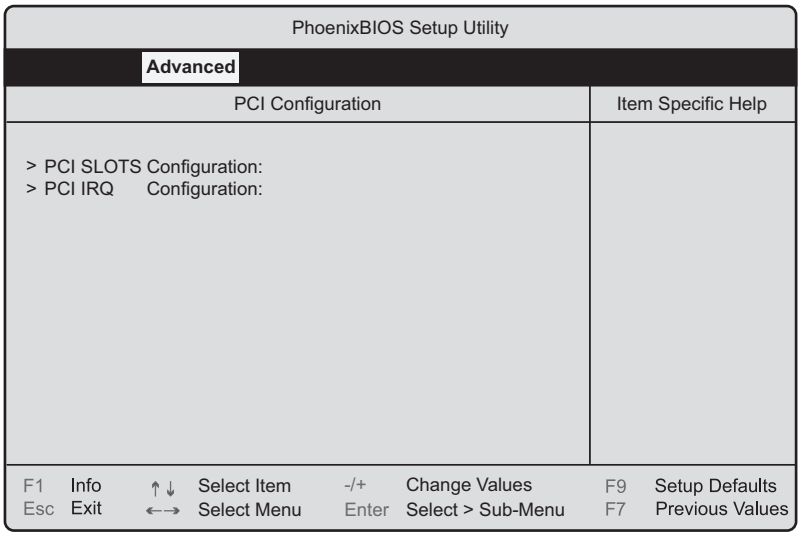


table: Items on the PCI Configuration Submenu

Item	Setting	Description
PCI SLOTS Configuration	Configures the PCI slots. →"■ PCI SLOTS Configuration submenu" (p.193)	
PCI IRQ Configuration	Sets PCI IRQ for each PCI slot. →"■ PCI IRQ Configuration submenu" (p.194)	

■ PCI SLOTS Configuration submenu

Use this submenu to configure the PCI slots.

table: Items on the PCI SLOTS Configuration Submenu

Item	Setting	Description
PCI Slot 1 Configuration Option ROM Scan	• Disabled • Enabled (Initial value)	Sets whether or not to initialize the extended ROM in each PCI slot.
PCI Slot 2 Configuration Option ROM Scan		
PCI Slot 3 Configuration Option ROM Scan	• Disabled (Initial value) • Enabled	
PCI Slot 4 Configuration Option ROM Scan		
PCI Slot 5 Configuration Option ROM Scan		
PCI Slot 6 Configuration Option ROM Scan		
PCI Slot 7 Configuration Option ROM Scan		

■ PCI IRQ Configuration submenu

Use this submenu to set PCI IRQ for each PCI slot.

table: Items on the PCI IRQ Configuration Submenu

Item	Setting	Description
PCI IRQ Line 1	Auto (Unchangeable)	Sets which PCI IRQ is allocated to which PCI slot.
PCI IRQ Line 2		
PCI IRQ Line 3		
PCI IRQ Line 4		
PCI IRQ Line 5		
PCI IRQ Line 6		
PCI IRQ Line 7		
PCI IRQ Line 8		

7.2.8 Advanced System Configuration Submenu

This submenu appears when selecting [Advanced System Configuration] from the [Advanced] menu.
Configures additional settings.
The items which are not displayed in the following figure can be displayed by using the scroll bar.

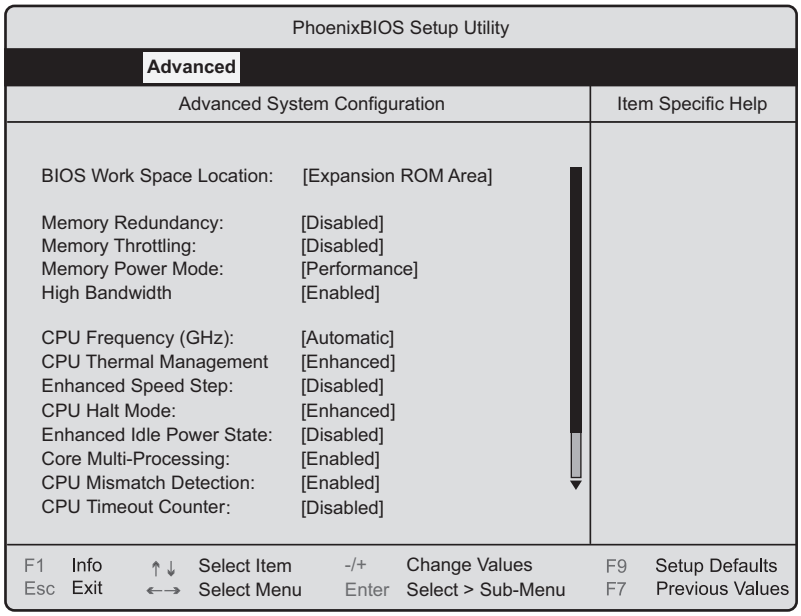


table: Items on the Advanced System Configuration Submenu

Item	Setting	Description
BIOS Work Space Location	Expansion ROM Area (Unchangeable)	Sets memory space for BIOS operation.
Memory Redundancy	• Disabled (Initial value) • Sparing • Mirroring	Sets whether or not to use the memory mirroring function or memory sparing function.
Memory Throttling	• Disabled (Initial value) • Enabled	Sets memory throttling.
Memory Power Mode	• Performance (Initial value) • Energy	Sets memory power control.
High Bandwidth	Enabled (Unchangeable)	Sets FSB (Front Side Bus).
CPU Frequency (GHz)	Automatic (Unchangeable)	Sets the CPU clock frequency.
CPU Thermal Management	Enhanced (Unchangeable)	Configures the CPU internal settings.
Enhanced Speed Step	• Disabled (Initial value) • Enabled	Sets whether or not to use the power saving function. This item may not be displayed depending on CPU. **Note:** ▸ When the OS is Linux, do not change the initial value, "Disabled".
CPU Halt Mode	Enhanced (Unchangeable)	Configures the CPU internal settings.
Enhanced Idle Power State	• Disabled (Initial value) • Enabled	Sets the power control for when the OS is idling.
Core Multi-Processing	Enabled (Unchangeable)	Sets whether to enable or disable the multi core function.
CPU Mismatch Detection	Enabled (Unchangeable)	Sets whether to enable or disable checking the CPU type and frequency.
CPU Timeout Counter	Disabled (Unchangeable)	Not supported by this server.
Limit CPUID Functions	Disabled (Unchangeable)	Configures the CPU internal settings.
NX Memory Protection	• Disabled (Initial value) • Enabled	Sets whether to enable or disable the processor's Data Execution Prevention (DEP) function.
CPU MC Status Clear	Next Boot (Unchangeable)	Configures the CPU internal settings.
Virtualization Technology	• Disabled (Initial value) • Enabled	Sets whether to enable or disable Virtualization Technology. **Note:** ▸ When exiting the BIOS Setup Utility after changing the setting value and saving the configuration, the server will be restarted automatically.
Hardware Prefetch	Enabled (Unchangeable)	Configures the CPU internal settings.
Adjacent Sector Prefetch	Enabled (Unchangeable)	Configures the CPU internal settings.
High Precision Event Timer	Disabled (Unchangeable)	Sets whether or not to use the high precision event timer of the chipset.
I/OAT	Disabled (Unchangeable)	Sets whether or not to use the extended data transfer function between chipsets.

7.2.9 Power On/Off Submenu

This submenu appears when selecting [Power On/Off] from the [Advanced] menu.
Use this submenu to configure the power on/off settings.

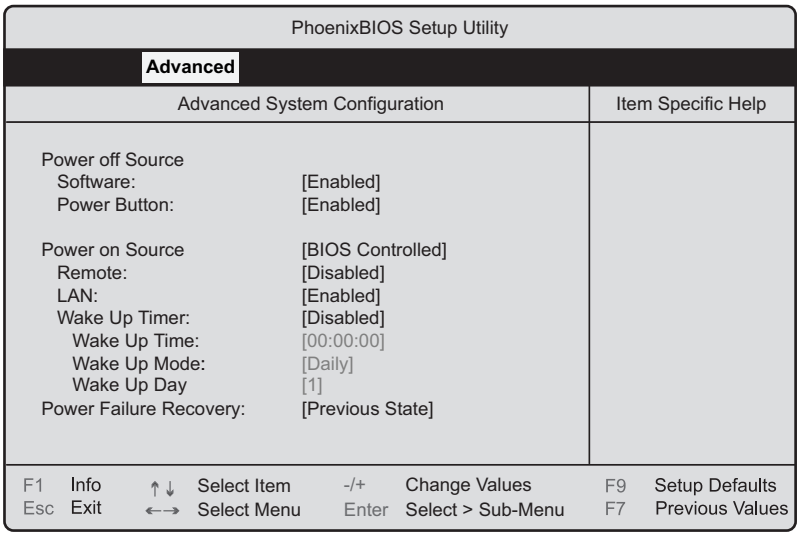


table: Items on the Power On/Off Submenu

Item	Setting	Description
Power-Off Source	-	
Software	Enabled (Unchangeable)	Sets whether to turn the power off by the program or by the OS.
Power Button	Enabled (Unchangeable)	Sets whether or not to allow the use of the power switch for turning the power off, when the ACPI function is disabled.
Power-On Source	BIOS Controlled (Unchangeable)	Sets the operation when turning the power on.
Remote	• Disabled (Initial value) • Enabled	Sets whether or not the power is turned on when the modem (connected to the serial port) receives a ring signal.
LAN	• Disabled • Enabled (Initial value)	Sets whether or not to enable the power to be turned on via LAN.
Wake Up Timer	Disabled (Unchangeable)	Sets whether or not the power is turned on at a certain time or after a certain time has passed.
Wake Up Time	Sets when to turn the power on by timer.	
Wake Up Mode	Sets the interval to turn the power on by timer.	
Wake Up Day	1 (Unchangeable)	Sets the day to turn the power on by timer.
Power Failure Recovery	• Always On • Always Off • Previous State (Initial value)	Sets the state of the power when the system goes down due to abnormal power, or after turning the power back on by UPS. **Note:** ▸ When UPS is used, be sure to set to [Always ON].

7.2.10 IPMI Submenu

This submenu appears when selecting [IPMI] from the [Advanced] menu.
Use this submenu to configure the integrated Remote Management Controller (iRMC) settings.

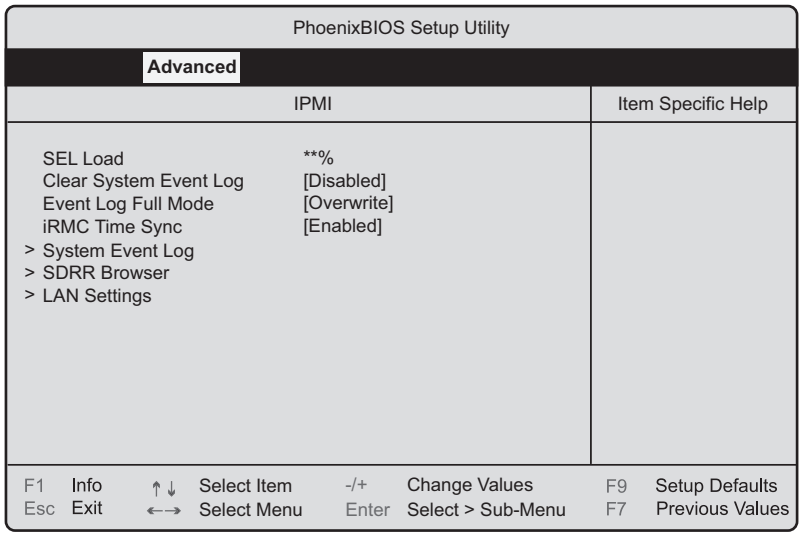


table: Items on the IPMI Submenu

Item	Setting	Description
SEL Load	Displays the percentage of the SEL stored.	
Clear System Event Log	• Disabled (Initial value) • Enabled	Sets whether or not to delete the logs stored in the System Event Log (SEL).
Event Log Full Mode	Overwrite (Unchangeable)	Configures the log settings when the SEL becomes full.
iRMC Time Sync	Enabled (Unchangeable)	Sets whether or not to synchronize the internal timer of the integrated Remote Management Controller (iRMC) with the system time.
System Event Log	Displays the content of the SEL. The system event logs referable in this submenu are for reference only. For details on the system event logs, see "8.3 System Event Log" (→p.229).	
SDRR Browser	Displays data for each sensor.	
LAN Settings	Sets the LAN when remote controlled by the RemoteControlService. →"■ LAN Settings submenu" (p.198)	

■ LAN Settings submenu

Use this submenu to set the LAN when remote controlled by the RemoteControlService.

table: Items on the LAN Settings Submenu

Item	Setting	Description
DHCP	• Disabled (Initial value) • Enabled	Sets whether or not to acquire LAN IP address of iRMC from the DHCP server.
Local IP address	Sets the IP address of the iRMC.	
Subnet mask	Enter the subnet mask of the onboard LAN specified in [Local IP address].	
Gateway address	Enter the gateway address of the onboard LAN specified in [Local IP address].	
Service LAN	• Disabled • Enabled (Initial value)	Sets whether to enable Service LAN.
Service LAN Port	Service (Unchangeable)	Sets Service LAN. This item appears when [Enabled] is selected for [Service LAN].

7.2.11 Security Menu

The Security menu sets the security options.

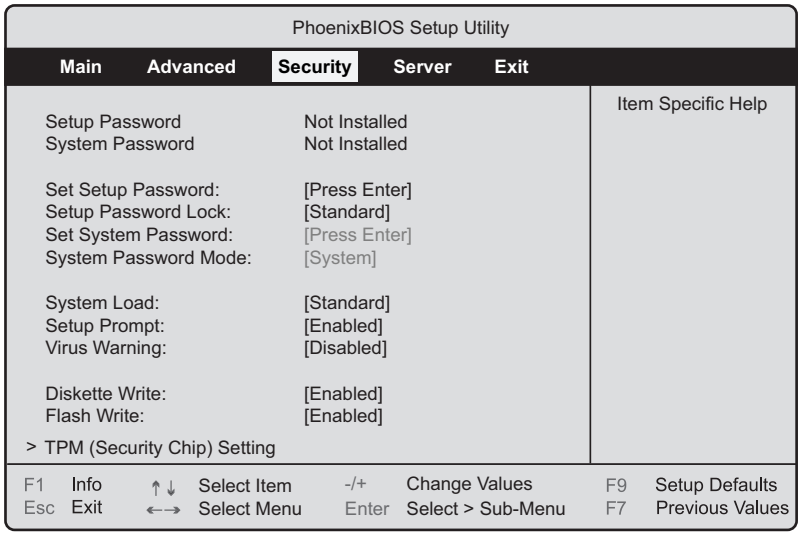


table: Items on the Security Menu

Item	Setting	Description
Setup Password	Displays whether or not the setup password required for the setup is set. When the password is not set, "Not Installed" is displayed. When the password is set, "Installed" is displayed.	
System Password	Displays whether or not the system password is set. When the password is not set, "Not Installed" is displayed. When the password is set, "Installed" is displayed.	
Set Setup Password	Sets the setup password. A setup password prevents starting the BIOS Setup without permission. Select this field and press the [Enter] key, and then input the setup password. For how to set, change, or delete the password, see "8.4.2 Security against Unauthorized Use" (→p.231).	
Setup Password Lock	• Standard (Initial value) • Extended	Sets the range of protection by the setup password. The setup password must already be set.
Set System Password	Sets the system password. The system password prevents unauthorized access to the system. The setup password must already be set. Select this field and press the [Enter] key, and then input the system password. For how to set, change, or delete the password, see "8.4.2 Security against Unauthorized Use" (→p.231).	
System Password Mode	• System (Initial value) • Keyboard	Sets the range of protection by the system password. The setup password and the system password must already be set.
System Load	• Standard (Initial value) • Diskette/CDROM Lock	Sets whether to enable or disable system startup from a floppy disk or CD/DVD drive.
Setup Prompt	• Disabled • Enabled (Initial value)	Sets whether or not to display the setup message "<F2> BIOS Setup / <F12> Boot Menu" in the POST screen when system is restarted.
Virus Warning	Disabled (Unchangeable)	Sets whether or not to check if the boot sector of the hard disk drive has been changed since the previous system startup. If the boot sector is changed without a clear reason, it is necessary to scan the system for computer viruses with a virus detection program.
Diskette Write	• Disabled • Enabled (Initial value)	Sets whether or not to protect against writing to floppy disks.
Flash Write	• Disabled • Enabled (Initial value)	Sets whether or not to protect against writing to the system BIOS.
TPM (Security Chip) Setting	Sets TPM (Security Chip). →"7.2.12 TPM (Security Chip) Setting Submenu" (p.200)	

7.2.12 TPM (Security Chip) Setting Submenu

This submenu appears when selecting [TPM (Security Chip) Setting] from the [Security] menu. Use this submenu to set TPM (Security Chip).

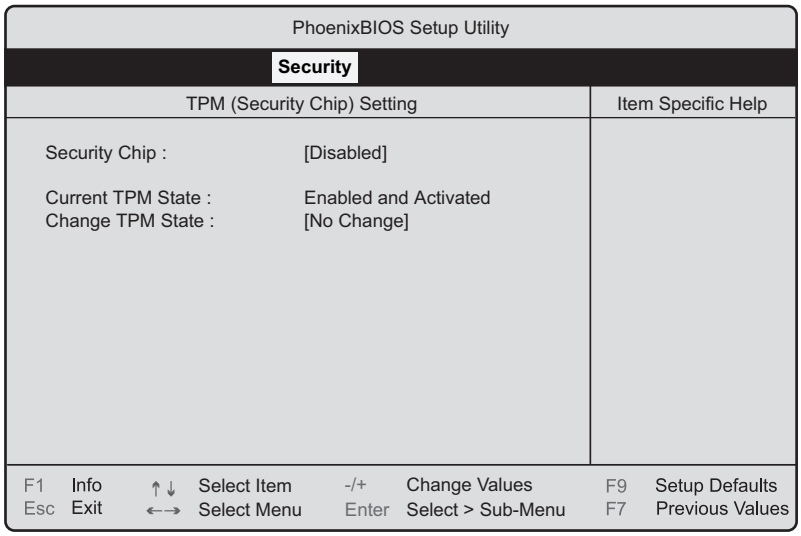
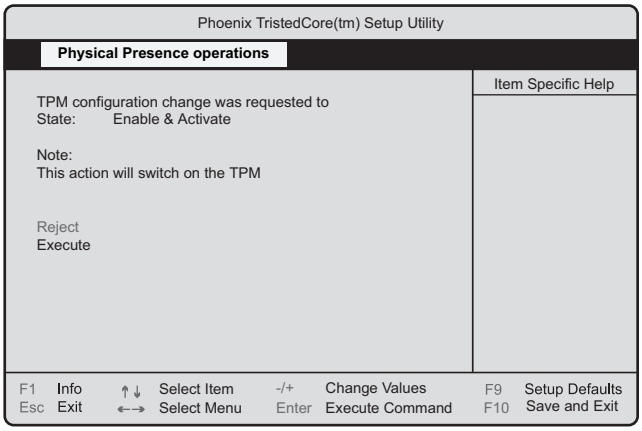


table: Items on the TPM (Security Chip) Setting Submenu

Item	Setting	Description
Security Chip	• Disabled (Initial value) • Enabled	Sets whether to enable or disable the Security Chip.
Current TPM State	Displays TPM status.	
Change TPM State	• No Change (Initial value) • Enable&Activate • Disable&Deactivate • Clear	Sets whether or not to change the Security Chip status.

POINT

- When rebooting after the settings of the [Change TPM State] item is changed, the BIOS Setup Utility may start up after POST finishes.
  In this case, select the [Physical Presence operations] submenu, and perform [Execute] in the following displayed window. The settings will be enabled.



7.2.13 Server Menu

The [Server] menu sets the server options.

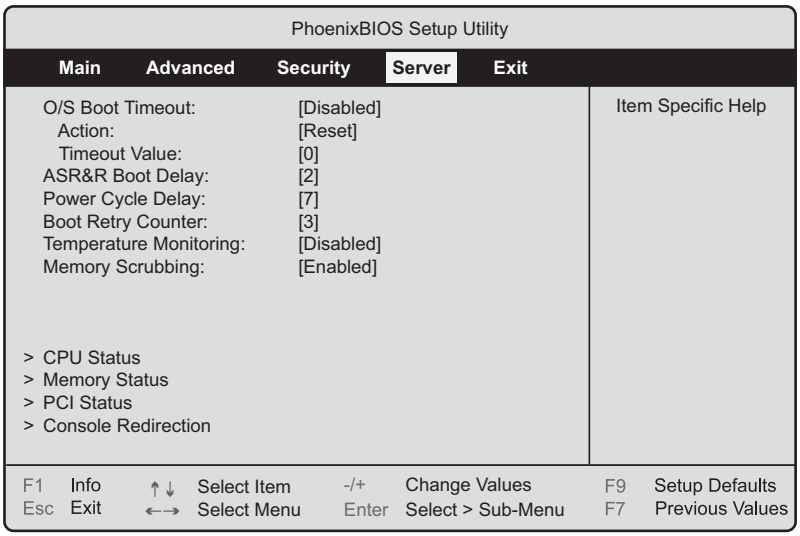


table: Items on the Server Menu

Item	Setting	Description
O/S Boot Timeout	• Disabled (Initial value) • Enabled	Sets whether to enable or disable the "OS Boot Monitoring" function when ServerView is installed in the OS. When this function is enabled, the system automatically restarts if the startup of the OS is halted for some reason. **Note:** ▶ The "OS Boot Monitoring" function can also be enabled or disabled from ServerView. ▶ If ServerView is not installed on the OS, be sure to set this item to "Disabled". When this function is enabled, the server may not operate as intended. For example, the power may automatically turn off, or the server may restart. ▶ If ServerView is installed in the OS, be sure to disable the "OS Boot Monitoring" function when starting up the system by inserting the PRIMERGY Startup Disc or DOS floppy diskette. If the system is started with this function enabled, the server may automatically turn off or restart improperly. If the server is operated with the "OS Boot Monitoring" function enabled, enable this function again before resuming operation. ▶ When setting this function, see the "ServerView User's Guide" to fully learn about its specifications, in order to use it properly with the correct settings.

table: Items on the Server Menu

Item	Setting	Description
Action	• Continue • Reset (Initial value) • Power Cycle	Sets the action to take if OS boot monitoring times out.
Timeout Value	• 0 (Initial value) • 0 to 100	Sets the timeout period. If the [O/S boot Timeout] is set to "Enabled" and the startup of the OS does not complete within the period set here, the system automatically restarts.
ASR&R Boot Delay	2 (Unchangeable)	Sets the time of reboot of the ASR&R (Automatic Server Reconfiguration & Restart) function.
Power Cycle Delay	7 (Unchangeable)	Sets the time until the server is turned on again after it is turned off.
Boot Retry Counter	• 3 (Initial value) • 0 to 7	Sets the maximum number of retries for booting the OS from 1 to 7. Each retry decreases the count value by one.
Temperature Monitoring	Disabled (Unchangeable)	Sets whether or not to turn the power off when the temperature is abnormal.
Memory Scrubbing	Enabled (Unchangeable)	Sets whether or not to correct errors in memory domains currently unused by the OS, or by application programs.
CPU Status	Sets whether or not to allow the use of the installed CPU. →"7.2.14 CPU Status Submenu" (p.204)	
Memory Status	Sets whether or not to allow the use of the installed memory modules. →"7.2.15 Memory Status Submenu" (p.205)	
PCI Status	Sets whether or not to allow the use of the installed expansion card. →"7.2.16 PCI Status Submenu" (p.206)	
Console Redirection	Configures detailed settings for console redirection. →"7.2.17 Console Redirection Submenu" (p.207)	

7.2.14 CPU Status Submenu

This submenu appears when selecting [CPU Status] from the [Server] menu.
Use this submenu to set whether or not to allow the use of the installed CPU.

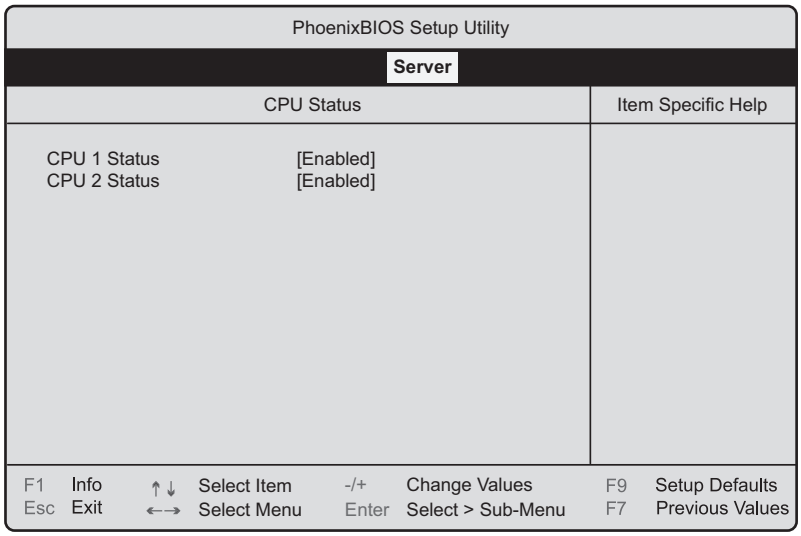


table: Items on the CPU Status Submenu

Item	Setting	Description
CPU 1 Status	Enabled (Unchangeable)	Sets whether or not to allow the use of the CPUs installed in CPU sockets 1 and 2. If "Disabled" or "Failed" is displayed, replace the faulty CPU and then change the setting to "Enabled".
CPU 2 Status		

7.2.15 Memory Status Submenu

This submenu appears when selecting [Memory Status] from the [Server] menu.
Use this submenu to set whether or not to allow the use of the installed memory modules.

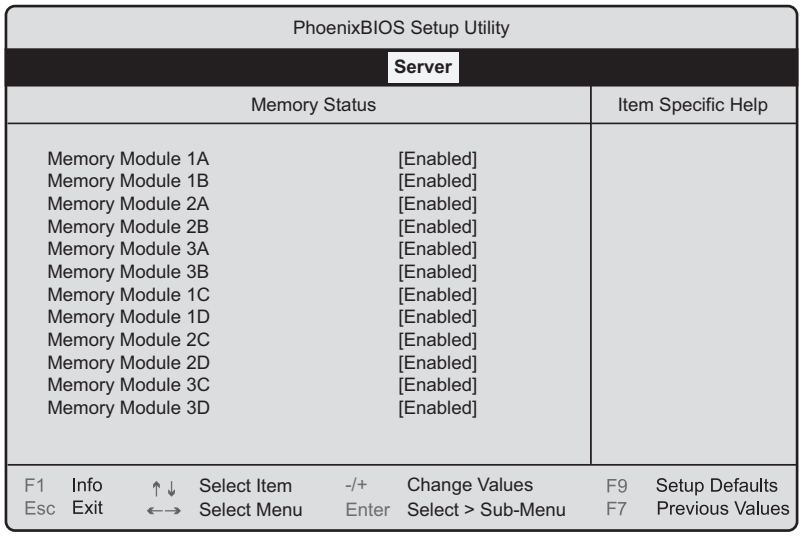


table: Items on the Memory Status Submenu

Item	Setting	Description
Memory Module 1A	Enabled (Unchangeable)	Sets whether or not to enable the use of the memory modules in memory slot 1A to 3D. If "Disabled" or "Failed" is displayed, replace the faulty memory module and then change the setting to "Enabled".
Memory Module 1B		
Memory Module 2A		
Memory Module 2B		
Memory Module 3A		
Memory Module 3B		
Memory Module 1C		
Memory Module 1D		
Memory Module 2C		
Memory Module 2D		
Memory Module 3C		
Memory Module 3D		

7.2.16 PCI Status Submenu

This submenu appears when selecting [PCI Status] from the [Server] menu.
Use this submenu to set whether or not to allow the use of the installed expansion card.

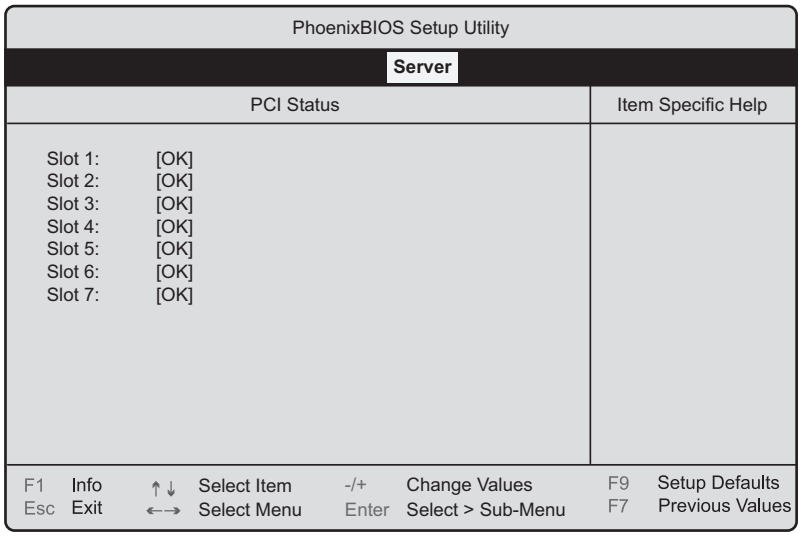


table: Items on the PCI Status Submenu

Item	Setting	Description
Slot 1	OK (Unchangeable)	Sets whether or not to enable the use of the expansion cards in PCI slot 1 to 7. If "Failed" is displayed, replace the faulty expansion card and then change the setting to "OK".
Slot 2		
Slot 3		
Slot 4		
Slot 5		
Slot 6		
Slot 7		

7.2.17 Console Redirection Submenu

This submenu appears when selecting [Console Redirection] from the [Server] menu.
Use this submenu to configure detailed settings for console redirection.

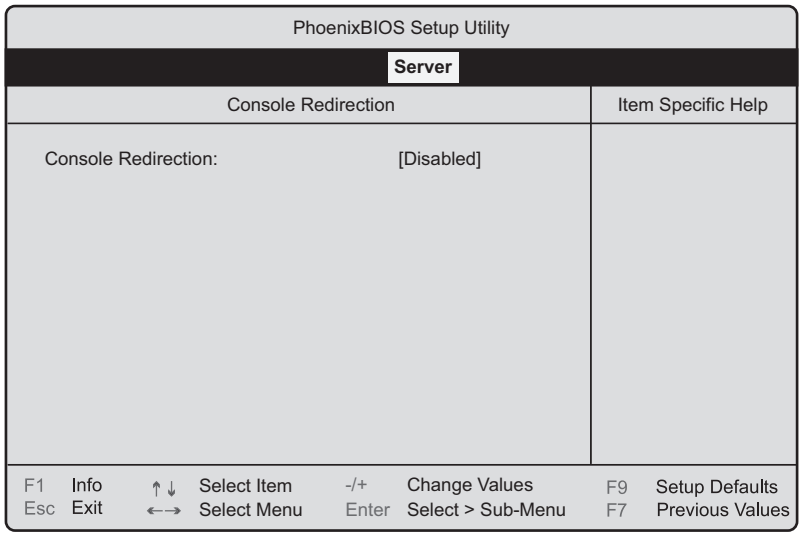


table: Items on the Console Redirection Submenu

Item	Setting	Description
Console Redirection	• Disabled (Initial value) • Enabled	Sets whether to enable or disable console redirection.
Port	• Serial 1 (Initial value) • Serial 2	Sets the serial port used for console redirection. This submenu appears when [Console Redirection] is set to "Enabled".
Baud Rate	• 1200 • 2400 • 4800 • 9600 (Initial value) • 19.2K • 38.4K • 57.6K • 115.2K	Sets the baud rate to be used for console redirection. This submenu appears when [Console Redirection] is set to "Enabled".
Protocol	• VT100 • VT100, 8-bit • PC-ANSI, 7-bit • PC-ANSI • VT100+ (Initial value)	Sets the console type for console redirection. This submenu appears when [Console Redirection] is set to "Enabled".
Flow Control	• None • XON/XOFF • CTS/RTS (Initial value)	Sets the flow control. This submenu appears when [Console Redirection] is set to "Enabled".
Mode	• Standard • Enhanced (Initial value)	Sets the range of use for console redirection. This submenu appears when [Console Redirection] is set to "Enabled".

7.2.18 Exit Menu

This menu exits the BIOS Setup Utility.

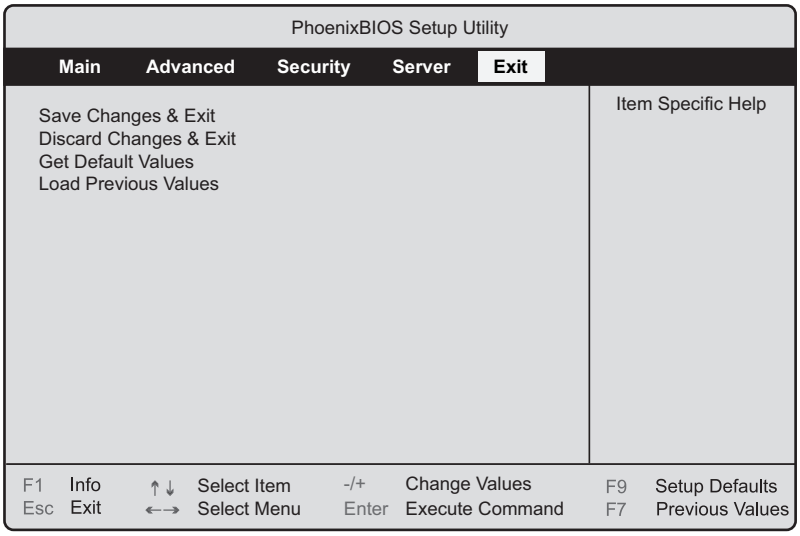


table: Items on the Exit Menu

Item	Description
Save Changes & Exit	Saves the current settings to CMOS and closes the BIOS Setup Utility. At the same time the server restarts.
Discard Changes & Exit	Exits the BIOS Setup Utility without saving the current settings. The previously saved settings remain valid.
Get Default Values	Reads and displays the default values of this server. However, the value set at the previous time is displayed for the value in "■ LAN Settings submenu" (→p.198).
Load Previous Values	Reads and displays the values valid at the time BIOS Setup Utility was loaded.

Chapter 8

Operation and Maintenance

This chapter explains the operations necessary after starting to use this server as well as daily care and maintenance.

8.1 Daily Maintenance

This section explains how to check the status of the operating server, as well as how to perform daily maintenance.

- **Information for PRIMERGY**

For the latest information on PRIMERGY, update modules, drivers and the software, refer to the Fujitsu PRIMERGY website.
http://www.fujitsu.com/global/services/computing/server/ia/driver/
Regarding BIOS and firmware, contact to Fujitsu Support Office. Refer to the following website.
http://www.fujitsu.com/global/contact/computing/PRMRGY_index.html

8.1.1 Checking the Server Condition

Use the status LED or server monitoring tool to check the server status.

■ Checking each LED

This server is equipped with LEDs that display various hardware conditions.
Check the server status via each LED after starting the server. For positions and functions of each status LED, refer to "1.3 Component Names and Functions" (→p.23).

■ Server monitoring tool (ServerView)

ServerView is software to monitor that the server hardware is in a normal state to protect important server resources. When using ServerView, the server hardware is monitored all the time. If an error that could cause trouble is detected, the administrator is notified in real-time for early detection. This allows the server administrator to remove a system error early and avoid trouble.
For an overview and installation of ServerView and other high reliability tools, refer to "1.2.2 High Reliability Tools" (→p.19) and "Chapter 5 High Reliability Tools" (→p.125).

8.1.2 Cleaning

Clean the server and optional devices periodically to prevent failures.

- Before cleaning, turn off the server and unplug the power cables from the outlets. Also power off peripherals and disconnect them from the server.
  Failure to do so may cause electric shock (→"1.4.3 Turning Off the Server" (p.32)).

- Do not use any cleaning sprays (including flammable types). It may cause a device failure or a fire.

■ Cleaning the server

Wipe with a soft, dry cloth. For stains that do not come off with a dry cloth, wipe with a cloth lightly dampened with a mild detergent. Once the stain has been removed, wipe off any remaining detergent with a cloth dampened with water. When wiping the server, be sure that no moisture enters the server. Do not use solvents. Use a mild detergent only. Otherwise, the server may be damaged.
Use a vacuum cleaner periodically to prevent dust buildup in ventilation holes.

POINT

- In dusty environments, dust accumulates up on the front and rear panels of the server over short periods. Install the server in a different location to avoid failures.

■ Cleaning the server interior

In dusty environments, dust accumulates on the server. Dust deposits may cause a server failure, fire, or electric shock. To keep the PRIMERGY server in good condition, use a vacuum cleaner periodically to remove dust deposits.

POINT

Cleaning components

- CPUs: Dust deposits must be removed because they will impair the cooling performance.
- Fans: Remove dust from and around the fans.
- Memory/expansion cards: Remove dust between memory modules and between expansion cards. Remove dust from the connector before adding a memory module or an expansion card.
- Internal hard disk units/internal options: Remove dust deposits from units and devices. Tape devices are particularly susceptible to dust and may cause failures. Install them in a clean environment.

WARNING Electric Shock

- Do not disassemble the PSU when cleaning the server interior. Doing so may cause failures or electric shock.

IMPORTANT

- Be careful when removing components such as CPUs, memory modules, or hard disk units. Be sure to install parts and cables in the original position.
- Leaving brushed off or blown off dust in the server can cause a failure. Be sure to remove it completely.

■ Optional devices

For cleaning optional devices, refer to the manual of each device.

8.1.3 Replacement of Consumable Parts

Consumable parts are required to be replaced to maintain performance and function. Users are responsible of procurement and replacement of consumable parts.
For procurement, contact an office listed in the "Contact Information" of "Start Guide".
For replacement procedures, refer to the "6.5.4 How to Install a Battery Backup Unit (BBU)" (→p.161).

■ Consumable parts

This server contains the consumable parts listed below.

table: Consumable Parts List

Consumable part	Product ID	Target Product	Description
Battery Backup Unit	PG-BBU1	SAS RAID Ctrl (PG-248CL, PGB2U48CL, PG-244CL, PGB244CL)	The Battery Backup Unit is required to be replaced within 3 years from procurement of the server or the previous replacement regardless of the accumulated time period of use.
	PG-BBU4	SAS RAID Ctrl (PG-248G2L)	

8.2 Troubleshooting

This section explains the resolutions when the server is not running properly or when error messages are displayed.
For each situation, refer to the following.

- Hardware problems. →"8.2.1 Hardware Troubleshooting" (p.213)
- Error messages. →"8.2.2 Error Messages" (p.216)
- Software problems. →"8.2.3 Software Troubleshooting" (p.222)

If the problem is not resolved after performing the following troubleshooting, contact an office listed in the "Contact Information" of the "Start Guide".
When contacting an office listed in the "Contact Information" of the "Start Guide", refer to "8.8.1 Contacting Maintenance Support" (→p.242) and collect the required information.

● Information for PRIMERGY

For the latest information on PRIMERGY, update modules, drivers and the software, refer to the Fujitsu PRIMERGY website.
http://www.fujitsu.com/global/services/computing/server/ia/driver/
Regarding BIOS and firmware, contact to Fujitsu Support Office. Refer to the following website.
http://www.fujitsu.com/global/contact/computing/PRMRGY_index.html

8.2.1 Hardware Troubleshooting

This section explains hardware related troubleshooting. If the server does not operate properly or if a failure is suspected, check the following.
For optional devices, refer to the optional device manual.

■ Server

● The server does not power on, or the power LED on the front of the server does not light up.

Check to see whether the power cable is properly connected to the outlet.
For instructions on connecting the power cable, refer to "Start Guide".

● An error message is displayed.

Refer to "8.2.2 Error Messages" (→p.216).

● When an expansion card is added, other expansion cards or onboard devices are not recognized.

Reinstall the drivers for the expansion cards or onboard devices that are not recognized.

● A temperature warning is output to the hardware event log and OS event log, or ServerView issues a notification of a temperature warning such as by a popup message.

The above log is output or the above notification is issued by ServerView when the ambient temperature is within 30 to 35°C, which is near the upper limit of the temperature boundaries (10 to 35°C). This is to notify the administrator before the ambient temperature actually exceeds the range of the temperature boundaries.
Although continued use within the temperature boundaries poses no problems within itself, reconsider the surrounding environment conditions if this log is output or if ServerView issues this notification.

● POST stops, generating the "Expansion ROM not initialized..." message.

Change [Reset Configuration Data] on "7.2.5 Advanced Menu" (→p.190) to [Yes] in the BIOS Setup Utility.

● RS-232C device is not recognized by the server.

Check that the serial port is not set to be used as a server management port. Although the serial port can be used as a server management port in this server, in this case, RS-232C device cannot be connected to the serial port.
For procedures for using server management port, refer to "Appendix C Remote Control Function" (→p.251).

● Serial ports are not recognized properly in Device Manager.

This may occur when the Serial 1 and Serial 2 settings are changed with "7.2.6 Peripheral Configuration Submenu" (→p.191) in the [Advanced] menu of the BIOS Setup Utility. If this occurs, delete all serial ports in Device Manager and restart the system.

■ Display

● The display does not power on.

Check to see whether the power cable of the display is properly connected to the outlet. For details, refer to "Start Guide" or the manual of the display.

● The display is distorted at Linux shutdown.

Although the display might be distorted when the system shuts down in the Linux environment, shutdown is performed normally. The system is not effected.

● Nothing is displayed on the screen.

- Check to see whether the display cable is connected properly.
  If it is not connected, turn the server off and then connect the cable. For the connection location, refer to "Start Guide".
- Check that the brightness volume and contrast volume of the display are adjusted correctly. If they need to be adjusted, perform the necessary adjustments.
  For details, refer to the manual of the display.

- There may be an error in the system area of the memory. Contact an office listed in the "Contact Information" of the "Start Guide".

● Typing the keyboard does not display any characters, or the mouse cursor does not move.

Check to see whether the keyboard and mouse are connected properly. If they are not connected or you replace them yourself, turn the server off and then connect the cables to the server. For the connection location, refer to "Start Guide".

● The screen shakes.

If a device that produces a strong magnetic field such as a television or speaker is near the display, place them further away from the display.
The display may also shake if a nearby cell-phone receives a call. Do not use a cell-phone near the display.

● The screen display is distorted.

The screen display may be distorted during 3D program execution or the 3D program may terminate abnormally. If this occurs, set Color quality in screen properties to anything other than True Color (32 bits).

■ CD/DVD drive unit

● Cannot read data.

- Check to see whether the CD/DVD is inserted properly.
  If it is not inserted, correctly insert the CD/DVD so that the label is facing up.
- Check to see whether the CD/DVD is not dirty.
  If it is dirty, wipe it with a soft, dry cloth.
- Check to see whether the CD/DVD is not scratched or bent.
  If scratched or damaged, replace the CD/DVD.

■ SCSI device (internal/external)

● The unit does not operate properly.

- Check to see whether the internal cable is connected properly.
  If it is not connected, correctly connect the cable.
- Check to see whether the SCSI IDs and terminator are set properly.
  If they are not set, correctly set the SCSI ID and terminator.

8.2.2 Error Messages

This section explains the error messages for this server.

■ POST error messages

When an error occurs during POST (Power On Self Test: a device check performed during the server startup process) on this server, take the corresponding corrective actions described in the table below.

POINT

- When checking/changing the settings of the BIOS Setup Utility, refer to "7.2 BIOS Setup Utility" (→p.183).
- For instructions on checking peripheral connections, refer to "Start Guide".
- For details on installing internal options, refer to "Chapter 6 Installing Internal Options" (→p.133).

table: List of POST error messages

Message	Description
Failure Fixed Disk	The IDE device is abnormal. Check the "7.2.3 Standard IDE Submenu" (→p.187) settings in the [Main] menu and the [ATA Controller Config] settings on the "7.2.6 Peripheral Configuration Submenu" (→p.191) in the [Advanced] menu of the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Stuck Key Keyboard error	Remove objects, if any, that are pressing against any keys on the keyboard. Check to see whether the keyboard is connected properly and restart the system. If the message still appears, the keyboard must be replaced.
Keyboard controller error	The keyboard controller is abnormal. Replace the keyboard or mouse. If the message still appears, the keyboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
System RAM Failed at offset: nnnnnnnnh Shadow RAM Failed at offset: nnnnnnnnh Extended RAM Failed at address line: nnnnh	The memory is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the faulty memory. If the message still appears after replacing, the memory board or baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Memory type mixing detected Unsupported memory configuration detected	The installation configuration of the memory is wrong. Check that the memory boards or memory modules are installed in the proper slots.
Correctable memory error in module n Uncorrectable memory error in module n	The memory is abnormal. Replace the memory module that corresponds to "module n" (where n is the slot number). If the message still appears after replacing, the memory board or baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Memory decreased in Size Non Fujitsu Siemens Memory Module detected Warranty restricted!	The memory is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the faulty memory.
System battery is dead - Replace and run SETUP	The battery is abnormal. Contact an office listed in the "Contact Information" of the "Start Guide".

table: List of POST error messages

Message	Description
System CMOS checksum bad - Default configuration used	The CMOS is abnormal. Correct the current settings with the BIOS Setup Utility or configure the settings at the time of purchase. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
System timer error	The system timer is abnormal. Power off the server and turn it back on. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Real time clock error	The Real Time Clock (RTC) is abnormal. Enter the correct time on the "7.2.2 Main Menu" (→p.186) of the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Check date and time settings	The date and time that have been set are abnormal. Enter correct date and time setting on the "7.2.2 Main Menu" (→p.186) of the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Previous boot incomplete - Default configuration used	POST is not completed during previous booting. Be sure to perform the following operation. Failure to do so may result in the OS not starting or the server not operating correctly. 1. Turn on the server or restart it. 2. Press the [F2] key to start the BIOS Setup Utility. (Do not press the [F1] key.) 3. Select [Save Changes & Exit] in "7.2.18 Exit Menu" (→p.208) and press the [Enter] key. 4. If message "Save configuration changes and exit now?" appears, use the [←] and [→] keys to move the cursor to [Yes], and press the [Enter] key. The BIOS Setup Utility closes and the server restarts. After this, start the system as usual.
CPU mismatch detected	The CPU frequency has changed. Check the CPUs before and after replacement in order to install the correct CPU. If the message still appears after the correct CPU was installed, BIOS requires to be updated. Update the BIOS using updating tool supplied with new CPU. If the message still appears, change the [Reset Configuration Data] setting to [Yes] on the "7.2.5 Advanced Menu" (→p.190) of the BIOS Setup Utility. Nevertheless, if the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Available CPUs do not support the same bus frequency- system halted	CPUs with varying frequencies are installed. Install the correct CPU. If the message still appears after the correct CPU was installed, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
System Cache Error - Cache disabled	The cash error occurs in the system. Power off the server and turn it back on. If the message still appears, check the error log and replace the CPU if it is at fault. Or the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".

table: List of POST error messages

Message	Description
Verify CPU Frequency selection in Setup	The CPU is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the CPU if it is at fault. Or the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
System Management Configuration changed	If this is displayed right after changing the hardware configuration, disregard it. If the same message is displayed again, confirm the cable is correctly connected and change the [Reset Configuration Data] setting to [Yes] on the "7.2.5 Advanced Menu" (→p.190) of the BIOS Setup Utility.
Invalid System Configuration Data	The system configuration is abnormal. Check that the configuration is supported. If the message still appears even though the configuration is supported, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Operating system not found	The OS used for start up cannot be found. Check that the cables of each device are connected correctly. Or check that SAS/ RAID recognizes the device normally during POST. Check the [Boot Sequence] setting on the "7.2.4 Boot Options Submenu" (→p.188) in the [Main] menu of the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Patch for installed CPU not loaded. Please run the bios flash update diskette.	Check that the correct CPU is installed. If the correct CPU is installed and the message still appears, BIOS requires to be updated. Update the BIOS using updating tool supplied with new CPU. If the message still appears, select [Yes] for the [Reset Configuration Data] setting on the "7.2.5 Advanced Menu" (→p.190) of the BIOS Setup Utility. Nevertheless, if the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
PCI system error BUS/DEVICE/FUNCTON xxxxh	The expansion card is abnormal. Replace the expansion card. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
CPU had been changed - Run setup	The CPU has been replaced. This message appears after the baseboard or CPU is replaced. Select [Yes] for the [Reset Configuration Data] setting on the "7.2.5 Advanced Menu" (→p.190) of the BIOS Setup Utility.
No usable CPU	Installed CPU error. Replace the CPU. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
No usable system memory	Memory error. Check the error log and replace the memory module. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
Memory Redundancy Feature could not configure the Mirror DIMMs	Memory Mirroring cannot be configured. Confirm that the memory bank that configures the mirror is the same capacity. If the memory is installed properly, it must be replaced.
Memory Redundancy Feature could not configure the spare DIMMs	Memory sparing cannot be configured. Confirm that the memory bank that configures the spare is the same capacity or larger. If the memory is installed properly, it must be replaced.

table: List of POST error messages

Message	Description
Application CPU timeout error	The CPU is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the CPU if it is at fault. Or the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Server Management Configuration NVRam Bad - defaults loaded!	The contents of NVRam is abnormal. Correct the current settings on the BIOS Setup Utility or turn the setting back to the default. When the correct setting values are saved by Server Management Tools, restore it. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Baseboard Management Controller Error	The baseboard management controller is abnormal. Power off the server and turn it back on. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
PCI Express link width degraded	The PCI Express card is abnormal. Replace the PCI Express card. If the message still appears, the baseboard or CPU must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
USB Over current on HC	The current value of the USB onboard device is abnormal. Power off the server and turn it back on. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Uncorrected CPU Machine Check Architecture (MCA) error	The CPU is abnormal. Power off the server and turn it back on. If the message still appears, check the error log and replace the CPU if it is at fault. Or the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Memory configuration has changed - Run SETUP	The memory configuration has changed. This message may appear after replacing the baseboard or memory module. Select [Yes] for the [Reset Configuration Data] setting on the "7.2.5 Advanced Menu" (→p.190) of the BIOS Setup Utility.
Memory module failed! This module is no longer available for the operating system.	The memory is abnormal. Replace the memory module. If the message still appears, the memory board or baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
CPU disabled! CPU is no longer available for the operating system.	The CPU is abnormal. Replace the CPU. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
Resource Conflict	The hardware resource is abnormal. Power off the server and turn it back on. If the message still appears, select [Yes] for the [Reset Configuration Data] setting on the "7.2.5 Advanced Menu" (→p.190) of the BIOS Setup Utility. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
IRQ not configured	
Expansion ROM not initialized	
Allocation error static node#	
iRMC reports sensor status: CRITICAL TEMP	The temperature is abnormal. Check the environment where the server is used. If the message still appears, check the error log. The faulty part must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
iRMC reports sensor status: WARNING TEMP	

table: List of POST error messages

Message	Description
iRMC reports sensor status: CRITICAL Voltages	The voltage is abnormal. Power off the server and unplug the power cable. After that, turn the power back on. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
iRMC reports sensor status: WARNING Voltages	
iRMC reports sensor status: CRITICAL Battery	The battery voltage is abnormal. Power off the server and unplug the power cable. After that, turn the power back on. If the message still appears, the baseboard or battery must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
iRMC reports sensor status: WARNING Battery	
iRMC reports sensor status: CRITICAL FAN* CPU (*: 1 to 6)	CPU fan error. Check that there is nothing obstructing the fan rotation. If the message still appears even though there is no obstacle, the CPU fan or baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
iRMC reports sensor status: WARNING FAN* CPU (*: 1 to 6)	
iRMC reports sensor status: CRITICAL FAN* SYS (*: 1 or 2)	System fan error. Check that there is nothing obstructing the fan rotation. If the message still appears even though there is no obstacle, the system fan or baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
iRMC reports sensor status: WARNING FAN* SYS (*: 1 or 2)	
iRMC reports sensor status: CRITICAL FAN PSU* (*: 1 or 2)	PSU fan error. Check that there is nothing obstructing the fan rotation. If the message still appears even though there is no obstacle, the PSU fan or baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
iRMC reports sensor status: WARNING FAN PSU* (*: 1 or 2)	
iRMC reports sensor status: CRITICAL DIMM-*A (*: 1 to 3)	Memory error. Replace the displayed memory module in the memory bank. If the message still appears, the memory board 1 or baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
iRMC reports sensor status: WARNING DIMM-*A (*: 1 to 3)	
iRMC reports sensor status: CRITICAL DIMM-*B (*: 1 to 3)	
iRMC reports sensor status: WARNING DIMM-*B (*: 1 to 3)	
iRMC reports sensor status: CRITICAL DIMM-*C (*: 1 to 3)	Memory error. Replace the displayed memory module in the memory bank. If the message still appears, the memory board 2 or baseboard must be replaced. Contact an office listed in the "Contact Information" of "Start Guide".
iRMC reports sensor status: WARNING DIMM-*C (*: 1 to 3)	
iRMC reports sensor status: CRITICAL DIMM-*D (*: 1 to 3)	
iRMC reports sensor status: WARNING DIMM-*D (*: 1 to 3)	
iRMC reports sensor status: CRITICAL PCI Slot* (*: 1 to 7)	The PCI card is abnormal. Check the error log and specify the error location, and replace the expansion card. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
iRMC reports sensor status: WARNING PCI Slot* (*: 1 to 7)	
iRMC reports sensor status: CRITICAL CPU* (*: 1 or 2)	The CPU is abnormal. Check the error log and replace the faulty CPU. If the message still appears, the baseboard must be replaced. Contact an office listed in the "Contact Information" of the "Start Guide".
iRMC reports sensor status: WARNING CPU* (*: 1 or 2))	

■ Server Management Tools error messages

The following error messages may appear while executing Server Management Tools. Perform the corresponding resolution listed in the table. If messages other than the following are displayed, contact an office listed in the "Contact Information" of the "Start Guide".

table: List of Server Management Tools error messages

Message	Description
Write protect error writing drive A. Abort, Retry, Fail?	The inserted floppy disk is write-protected. Disable the write-protect, and then press the [R] key.
Not ready writing drive A. Abort, Retry, Fail?	The floppy disk is not inserted. Insert the proper floppy disk ("Server Management Tools" floppy disk), and then press the [R] key.
ERROR:Fail to create data file.	The following are possible causes. Check the floppy disk status again. • The floppy disk is write-protected. Disable the write-protect and retry. • The floppy disk is not inserted. Insert the proper floppy disk, and then retry. • The floppy disk contains abnormal contents. Create the "Server Management Tools" floppy disk again. If this occurred while recovering BIOS information, configure the information using the BIOS Setup Utility. Then store the BIOS information.
ERROR:Fail to write 1st CMOS data into data file. nn	
ERROR:Fail to write 2nd CMOS data into data file. nn	
ERROR:Fail to write ESCD data into the data file. nn	
ERROR:Fail to write SEEPROM data into the data file. nn	
ERROR:Fail to open data file.	The file for recovering the BIOS information does not exist on this floppy disk. Insert the floppy disk on which the BIOS information was stored, and then retry.
ERROR:Fail to write 1st CMOS data into system. nn	The following are possible causes. Check the floppy disk status again. • The floppy disk is not inserted. Insert the proper floppy disk, and then retry. • A different model or an unsupported version of BIOS information. Insert the proper floppy disk, and then retry. • The floppy disk contains abnormal contents. Create the "Server Management Tools" floppy disk again. If this occurred while recovering BIOS information, configure the information using the BIOS Setup Utility. Then store the BIOS information.
ERROR:Fail to write 2nd CMOS data into system file. nn	
ERROR:Fail to write ESCD data into system file. nn	
ERROR:Fail to write SEEPROM data into system. nn	
Other messages	Contact an office listed in the "Contact Information" of the "Start Guide".

8.2.3 Software Troubleshooting

This section explains software-related troubleshooting. For troubles during OS installation or system operation, refer to the following contents.

■ Trouble at a ServerStart startup

● After a boot from PRIMERGY Startup Disc, nothing is displayed on the screen.

This situation may occur if the hard disk drive still contains the previous information. In that case, this situation may occur even when insert Windows Server 2003 Installation CD-ROM.
In such a situation, physically format the hard disk drive to delete the previous information and start up ServerStart.
For physical formatting for hard disk drive, refer to the manual on Array Controller Document & Tool CD.

■ Error messages during installation

The following error messages may appear during installation using ServerStart. Observe the corrective action against the relevant error.

● "WzDiskAdmin: System Error! ....., Last Error: The device is not ready." appears

Optional SCSI/SAS devices (e.g., hard disk cabinet, DAT unit) may be connected.
Disconnect the optional SCSI/SAS devices and perform installation again. Connect the optional devices after the installation completes.

● "Operating System not found" appears when the system restarts from the CD/DVD after file copy

The following factor may be possibly root cause.

- The Active flag is selected.

● "Missing Operating System" appears during installation

The installation partition size may be too large. Specify the installation partition size correctly. For details on the installation partition size, refer to "2.3.1 Installation Partition Size" (→p.45).

● "Error 1920. Service (PXE Services) failed to start" appears during preconfigured installation

The system installed with the preconfigured settings (PXE server) may not be connected to the network. Check the LAN cable connection and click [Rerun].

■ Application software which uses tftp client function (tftp.exe) does not operate properly

For the system on which Windows Server 2003 is installed, since the tftp client function (tftp.exe) is not installed by default, and application software which uses the tftp client function (tftp.exe) does not operate properly. To use the tftp client function (tftp.exe), install "tftp.exe" from the OS installation disc according to the following procedures.

1. Insert the OS installation disc.
   The OS installation disc must be any of Windows Server 2003 CD that has applied SP1, Windows Server 2003 x64 DVD or Windows Server 2003 R2 Disc 1 CD-ROM.

2. Start the Command Prompt and move to the i386 folder of the CD/DVD drive.

3. Execute the following command to extract "tftp.exe" in the "%Systemroot%\system32" folder.

```
[CD/DVD drive]:\i386>expand -r:tftp.exe TFTP.EX_ %Systemroot%\system32
```

4. Confirm that "tftp.exe" exists in the "%Systemroot%\System32" folder.

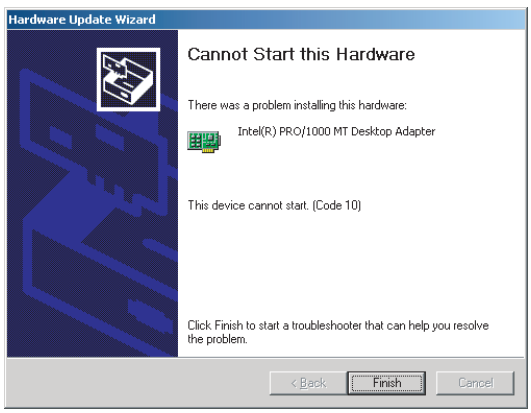
■ Error window appears after installing or uninstalling ServerView (For Windows Server 2003)

For Windows Server 2003 with Service Pack 1 applied, the following message may appear on restarting after installing/uninstalling ServerView. The operation will run properly. Click [Close Message] to close the message.

```
In order to protect the computer, this program is terminated by
Windows. Name: SNMP Service
```

■ Error window appears after LAN driver installation (For Windows Server 2003)

The following window may appear when the installation of the LAN driver to the [Ethernet controller] under [Other devices] starts.



This error results from that the LAN driver for the network adapter recognized immediately after the OS installation is not updated.
Clicking [Finish] in this window displays the [Help and Support Center] window. Click [X] to close this window. The "!" mark is displayed at the LAN device name in Device Manager. The device names are displayed properly when all the LAN drivers are installed and the system is restarted.

■ LAN operation fails or error message appears during LAN driver installation

A conflict may have occurred between system resources including the LAN and other expansion cards. Delete all the LAN drivers and check that conflicts between system resources do not exist. Then, restart the system and reinstall the LAN drivers again.

■ Event log errors after installation

After installation, the following events may be displayed in Event Viewer. Check and perform the corrective action against the relevant event.

table: List of event log errors that may occur after installation

ID	Description	Cause and corrective action
62	This computer is a domain PDC at the root of forest. Use the net command "net time /setsntp:<server name>" to configure it for synchronization from an external time source.	Cause: An NTP was selected as a component. Corrective action: ServerStart cannot configure the NTP server due to the absence of items for specifying it. After OS installation, perform the following procedure to specify the time server. 1. Start SNTP server operation on another machine. For example, the SNTP server address is <172.22.78.246>. 2. Enter the following at a Command Prompt. net time /setsntp:172.22.78.246 w32tm -s 172.22.78.246
1000	The user or computer name cannot be identified. The return value is "1722".	Cause: The primary DNS server address may be invalid or the server cannot be accessed. Corrective action: Perform the following procedures to correct the DNS address in Internet protocol (TCP/IP) properties. 1. Right-click [My Network] and click [Properties]. 2. Right-click [Local Area Connection] and click [Properties]. 3. Click [Internet Protocol (TCP/IP)] and click [Properties]. 4. Enter the correct DNS address in the [Primary DNS server] box.

■ Cannot collect the memory dump

If the memory dump file cannot be created, perform the following procedures.

● Correcting the settings

If the memory dump cannot be collected, check the settings of the paging file and memory dump file. For setting procedures, refer to "4.1 Memory Dump/Paging File Setting" (→p.74).

● Collecting memory dump to other than the system drive

If the memory dump is set to be collected to the system drive (C:\), change the settings so that the memory dump can be saved to a drive other than the system drive. For setting procedures, refer to "4.1 Memory Dump/Paging File Setting" (→p.74). If only the system drive exists, or if there is no free space in any of the drives, perform one of the following:

- Adding a hard disk unit
- Replacing with a higher-capacity hard disk unit

● Reducing the installed memory to collect the memory dump

There must be enough free disk space that matches the size of the installed memory; therefore, reduce the installed memory to a collectable size. Check the memory dump settings when changing the installed memory size.
For setting procedures, refer to "4.1 Memory Dump/Paging File Setting" (→p.74).

● Changing the write type of the debugging information

If the memory dump cannot be collected, select a write type of debugging information within the range of free space of the volume size. If the above does not provide a solution, try increasing the size of the hard disk or adding an additional hard disk unit. For setting procedures, refer to "4.1 Memory Dump/Paging File Setting" (→p.74)

■ Restoring the system

In the event where the system file, system configuration, or environment changes during startup are corrupted, use the repair information stored on the repair disk created at the installation to restore the system.
For restoration procedures, refer to "8.6 Restoring the System" (→p.237).

■ SNMP service startup fails

If the Simple Network Management Protocol (SNMP) is installed, but has not started, perform the following procedures to start the service.

1. Click [Start] – [Computer Management].
2. Select [Services] on the [Services and Applications] menu.
3. On the details, select [SNMP Service].
4. Select [Start] on the [Action] menu.

POINT

- To have the service automatically start each time the OS starts, double-click [SNMP Service] on the details, and select [Automatic] for the [Startup type] setting of the [SNMP Service Properties] window.

■ Time display in Linux OS environment

● Difference in time between the OS and the hardware clock

Since the software clock on OS is employed but not the hardware clock functioned in the server for time display in Linux environment, time -lag may occur between the OS and the hardware clock.
When time precision is required on OS, it is recommended to use the NTP service to periodically correct the time displayed on the OS.

● Changing the time settings for the OS and hardware clock

In a Linux environment, the time displayed on the OS (the software clock value on the OS) is written to the hardware clock in the server when the OS is shut down.

- Procedure for prohibiting the time on the OS from being written to the hardware clock
  When you do not want the time on the OS to be written to the hardware clock at an OS shutdown, comment the following line out in /etc/rc0.d/S01halt.
  runcmd $"Syncing hardware clock to system time" /sbin/hwclock $CLOCKFLAGS
  ↓
  #runcmd $"Syncing hardware clock to system time" /sbin/hwclock $CLOCKFLAGS
- Procedure for reflecting the hardware clock value to the time on the OS
  To reflect the hardware clock value to the software clock value on the OS, run the following command.
  >hwclock --hctosys

■ Notes on using an onboard LAN controller

When using an onboard LAN controller in the Windows Server 2003 or Windows Server 2003 x64 environment, LAN communication may not work properly, as in the following, depending on the in-use applications.

- When data transfer is performed through FTP, "426 Connection Closed; transfer aborted" is displayed. Or, the FTP connection is disconnected and data cannot be transferred through FTP.
- When using Microsoft SQL Server, the following messages are displayed.
  - [Microsoft] [ODBC SQL Server Driver] [DBNETLIB] General Network error
    Refer to the network manuals.
  - [Microsoft] [SQL Native Client] Communication link failure [08S01]
  - System.Data.SqlClient.SqlException: A transport-level error has occurred when sending the request to the server.

To avoid this problem, make sure to disable the "TCP Chimney Offload" setting by following the instructions below.

1 Click [Start] – [All Programs] – [Accessory] to start Command Prompt.

2 Enter the following command, and press the [Enter] key.

```
C:\> Netsh int ip set chimney DISABLED
```

When the setting change has completed, "OK" is output.
You do not need to restart the server after the setting change.

■ Warning Messages of ServerView Remote Connector

When ServerView Agent for Windows is installed, and the system is highly-loaded during startup, the following warning message may be recorded on the Application Event Log at server startup.

```
Type: Warinig
Source: ServerView Remote Connector
Event ID: 0
Description: Initialization not completed timely (0 seconds)
```

A heavy load during system startup causes a delay in ServerView Remote Connector initialization processing. This warning message reports that the service startup has not completed within the certain period of time, and not that the service startup has failed.
In this case, ServerView Remote Connector service continues the initialization processing. The service is automatically started after the completion of the initialization, so no special action is required.

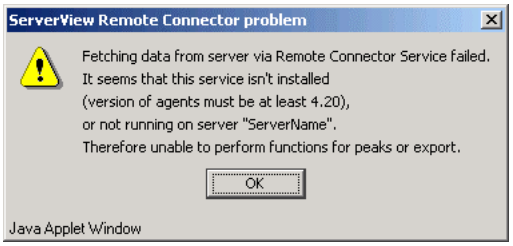
POINT

- The ServerView Remote Connector service is used with the following ServerView functions. Even if this service is not active, no other functions are affected.
  - Performance Manager
  - Power Monitor

Follow either of the following procedures to check whether the ServerView Remote Connector service is running normally.

● When using Performance Manager

1. Start the Performance Manager from the ServerView S2.
2. Select the server for which you want to check the ServerView Remote Connector service operation, from the left side frame.
3. Click the [Report View] tab.
4. Select any report, and click the [Show] button.
   If the graph is displayed, the ServerView Remote Connector service is running normally. When the service is not running normally, the following window appears.



POINT

- It is necessary to perform report settings beforehand.
- For the usage of Performance Manager, refer to "ServerView User's Guide".
- When the ServerView Remote Connector service is not running normally, restart the service by the following procedure below (There is no need to reboot the system).

1. Click [Start] – [Control Panel] – [Administrative Tools] – [Services] – [ServerView Remote Connector].
2. Select [Restart Service] in the operation menu.

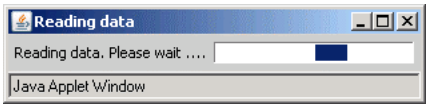
● When using Power Monitor

1 Start the Power Monitor from the ServerView S2.

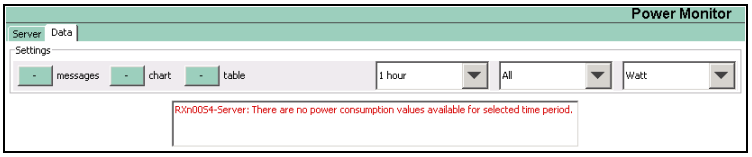
2 Select the server for which you want to check the ServerView Remote Connector service operation, from the left side frame.

3 Click the [Data] tab.

If the graph is displayed, the ServerView Remote Connector service is running normally. When the service is not running normally, the following window appears.



Then, the following window appears.



POINT

- For the usage of Power Monitor, refer to "ServerView User's Guide".
- When the ServerView Remote Connector service is not running normally, restart the service by the following procedure below (There is no need to reboot the system).
  1. Click [Start] – [Control Panel] – [Administrative Tools] – [Services] – [ServerView Remote Connector].
  2. Select [Restart Service] in the operation menu.

8.3 System Event Log

This section explains how to refer to and operate system event logs.

8.3.1 How to Refer to Event Logs

ServerView S2 is used for reference of system event logs. A summary of reference procedures is described below. For details such as how to start up ServerView, refer to the "ServerView User's Guide".

1. Start up ServerView S2.
2. Click the target server in the ServerList, whose event logs you want to refer to.
3. Select [Configuration] – [Recovery] on the menu list on the left side.
   The list of all the system event logs is displayed.

POINT

- The remote management controller of the web interface may be used to reference system event logs. To use remote management controller, refer to "Appendix D Remote Management Controller" (→p.256).

8.3.2 Deleting the System Event Log

Use BIOS Setup Utility to delete the system event logs.

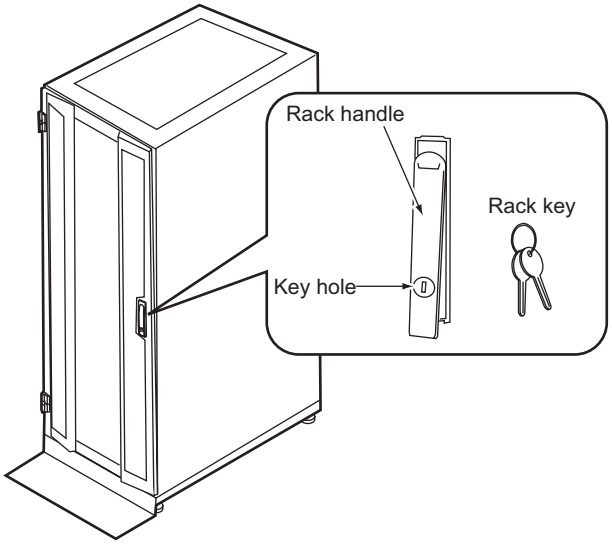
1. Start up BIOS Setup Utility.
   →"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)
2. Select the [IPMI] submenu from the [Advanced] menu, and press the [Enter] key.
   →"7.2.5 Advanced Menu" (p.190)
3. Set [Clear System Event Log] item to [Enabled] in the IPMI submenu.
   →"7.2.10 IPMI Submenu" (p.197)
4. Save the configured value and exit BIOS Setup Utility.

8.4 Security

Security features are provided in order to protect the server hardware and software from theft. Additional security functions, which prevent unauthorized use, provided by the BIOS Setup Utility are also available to help maintain a highly reliable data security system.

8.4.1 Hardware Security

Lock the rack door to protect the hardware in the rack from theft or tampering.
To close the rack door, shut the door and return the rack handle, and turn the rack key.



POINT

- Do not lose the rack key. If the key is lost, contact an office listed in the "Contact Information" of the "Start Guide".
- For instructions on opening the rack door, refer to "1.4.1 Opening the Rack Door" (→p.29).
- The above explanation is based on the 40U standard rack. For details on other rack systems, refer to their respective manuals.

8.4.2 Security against Unauthorized Use

A password can be set to prevent unauthorized use of the server.
When a password is set, the server is accessible only to the users who know the password.
The password is set in the BIOS Setup Utility. For details on the BIOS Setup Utility, refer to "7.2.11 Security Menu" (→p.198).

■ Password types

The following two types of password can be set in this server.
The password types define the privileges of server operations.

● System password (Administrator password)

This is the password that allows specific persons to access the BIOS setup. Unless the set password is entered, the BIOS setup cannot be accessed and the OS cannot be booted.

● Setup password (User password)

This is the password that allows specific persons to use the server. Unless the set password is entered, part of the BIOS setup cannot be accessed and the OS cannot be booted.

■ Setting a password

1 Start the BIOS Setup Utility.

→"7.2.1 Starting and Exiting the BIOS Setup Utility" (p.183)

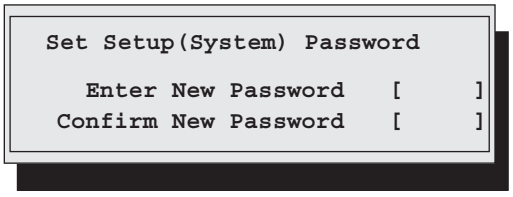
2 Select [Security] from the [Main] menu.

The [Security] menu appears.

3 Select the password type to be set.

- When setting an administrator password
  Select [Set System Password] and press the [Enter] key.
- When setting a user password
  Select [Set Setup Password] and press the [Enter] key.

4 The password entry window appears. Enter the password to be set.



1. Enter the password in the [Enter New Password] field.
   Alphanumeric characters can be used. Blocks are displayed instead of the letters entered. To cancel the password setting, press the [Esc] key.

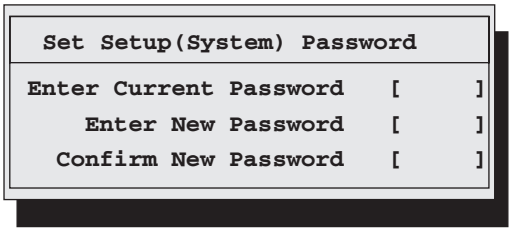
2. In the [Confirm New Password] field, enter the password you have entered in Step 1 and press the [Enter] key.
   [System Password] or [Setup Password] on the [Security] menu shows [Installed].

POINT

- When only the user or administrator password is set, the same setting items are accessible to both users and administrators.
- When both passwords are set, users can set dates and user passwords only.

■ Deleting / Changing password

To delete or change a password, select [Set System Password] or [Set Setup Password] from the [Security] menu.



1 Enter the current password in the [Enter Current Password] field in the password entry window.

2 Enter a new password in the [Enter New Password] field.
To delete the password, enter nothing and perform Step 4.

3 In the [Confirm New Password] field, enter the password you have entered in Step 2.
To delete the password, enter nothing and perform Step 4.

4 Press the [Enter] key.
When you delete the password, [System Password] or [Setup Password] on the [Security] menu shows [Not installed].

POINT

- The system shuts down after three invalid password entries. If this happens, power off the server, turn it back on, and then enter the correct password.

8.4.3 Security When Disposing of the Server

■ Notes regarding the deletion of data from the hard disk when disposing of or transferring the server

When disposing of or transferring a server that has been used, the data in the hard disk may be read and used unscrupulously. To prevent confidential or important data from leaking out, the data on the hard disk must be wiped before disposal or transfer.

However, wiping the hard disk is not an easy task. Simply initializing (formatting) the hard disk or deleting the files may give the pretense that the data no longer exists, but in reality the data is simply no longer accessible to the OS, and it is still accessible to malicious individuals that can restore the data.

Therefore, if confidential or important data is saved to the hard disk, in addition to the operations mentioned above, it is recommended to use third-party tools or services to wipe the data completely from the disk to prevent its restoration.

When disposing of or transferring the server, it is the customer's responsibility to wipe data contained in the hard disk in order to prevent such important data from leaking.

Also, if software license agreements prohibit unauthorized distribution of software (OS or application software), transferring the server without removing the software may violate the license agreements.

These issues must be taken into consideration.

8.5 Backup

This server utilizes high reliability components and hard disks, however, as a precautionary measure, it is recommended that periodic backups be taken of the data.

8.5.1 Importance of Backups

A backup of data stored on the server is required for data restoration in the event of server trouble resulting in a system failure or accidental data loss due to operational errors.
If the data on the server is backed up, it can be restored from the backup data in the event of data corruption in hard disk units due to hardware failures or operational errors. If backups are not made, restoration is impossible and your important data will be lost permanently. For smooth system operation, be sure to perform periodic backups of the system.

8.5.2 Backup Devices, Software and Their Operations

Backup operations differ depending on network operating systems, applications, and system operations. Contact an office listed in the "Contact Information" of the "Start Guide" and make backups using the following items.

- Backup device (e.g., DAT72 unit)
- Backup software
  (Standard backup software supplied with the OS, e.g., Changer Option)

  IMPORTANT
  - Although the Windows Server Backup function that is standardly provided with Windows Server 2008 can be used, backup to a tape device cannot be performed using this function.

- Backup operations (schedules)

Use our genuine backup devices and software. Observe the backup medium (tape) storage conditions.

POINT

- Mirroring/disk array systems
  To improve system reliability, a mirroring or disk array system using a SAS RAID Ctrl, in addition to periodic backup creation, is recommended.

■ Notes on operating backups

Notes on operating backups are as follows.

For details, refer to the device manuals and Readme.txt included in the device driver.

● Head cleaning

Airborne dust and dust from the magnetic media can collect on the head of the magnetic tape device. To remove this dust, head cleaning must be implemented. Implement head cleaning when the device displays a cleaning request. Particularly DAT devices require periodic head cleaning, otherwise dust can cling to the magnetic head, creating a situation that cannot be cleaned with standard head cleaning methods, and eventually render the device useless.

Also note that the cleaning media has a limit to how many times it can be used. Manage its life-span. Using cleaning media that exceeded its lifespan will have no cleaning effect. Note these points especially when performing automatic backups with library devices.

● Managing media lifespans

Media is a consumable product that must be replaced regularly.

Continued use of media exceeding its lifespan can have negative effects on the device (e.g. increase the speed of dust accumulation).

The lifespan of media varies depending on the environment and operation condition of the device, the type of backup software used, and other operation conditions, however, it is recommended that they be replaced sooner than later.

To manage the lifespan, write the use start date on the media.

● Rotating media

Rotate between several media for backups.

When using a single media cartridge repeatedly, backup data can be temporarily lost in the event the backup fails. Or if the hard disk were to fail during a backup, the data will become unrecoverable.

● Avoid leaving media in devices

Because the magnetic recording surface of the device is exposed, media can easily be affected by airborne dust when left inserted for an extended period of time. Insert the media before using it, and remove the media after use, and restore it in its case.

Also note that some tape devices write management information to the tape when ejecting the media. If the power were to go out when the media is still in the device, this writing process will not be performed and the media may become corrupted.

To avoid this, remove the media from the device when turning off the server/device.

● Verifying data after a backup

Some backup software products provide data verification functions after a backup is completed. Such functions will read and verify the data written to the media after a backup is completed. This will increase the usage of the media, thus reducing the number of times it can be used for backups.

Depending on the hardware being used, some devices perform "read after write" operations on data; note the points of this section as necessary.

Ejecting media after a backup

Some backup software products provide functions for ejecting media after a backup is completed. Such functions will rewind the tape after a backup is completed and then eject the media from the drive. Be sure to execute this function for autoloader/library devices. Depending on the structure of some servers, this function may cause the media to eject from an internal device of the server and hit the chassis door. If this is the case, open the door when ejecting, or do not eject the media.

Media label types and positions

When writing information such as the name on media, use the label that came with the media. The area in which a label can be posted on the media of each device varies. Failing to post labels in the designated area can damage the device.

Data storage

When storing data for long periods of time, store the media in a location least affected by temperature, humidity, and magnetic fields.

8.6 Restoring the System

If the system is damaged, use the backup data created after installation to restore the system.

POINT

- Create a recovery disk when you have installed an OS or changed the system configuration. Refer to "4.2 Creating Backup Data for System Recovery" (→p.81).
- When a restoration procedure is described in the backup device manual or Readme.txt included in the device driver, refer to the procedure instead of this section.
- When restoring the system, check that the USB floppy disk drive is connected before turning on the server's power.

8.6.1 For Windows Server 2008

The whole server can be restored using the Windows Server Backup function.

● Items required

- Windows Server 2008 DVD-ROM (Installation disc)
- Backup data created using the Windows Server Backup function (connectable shared folder, DVD, etc.)

1 Insert the Windows Server 2008 DVD-ROM (installation disc) immediately after turning on the server.

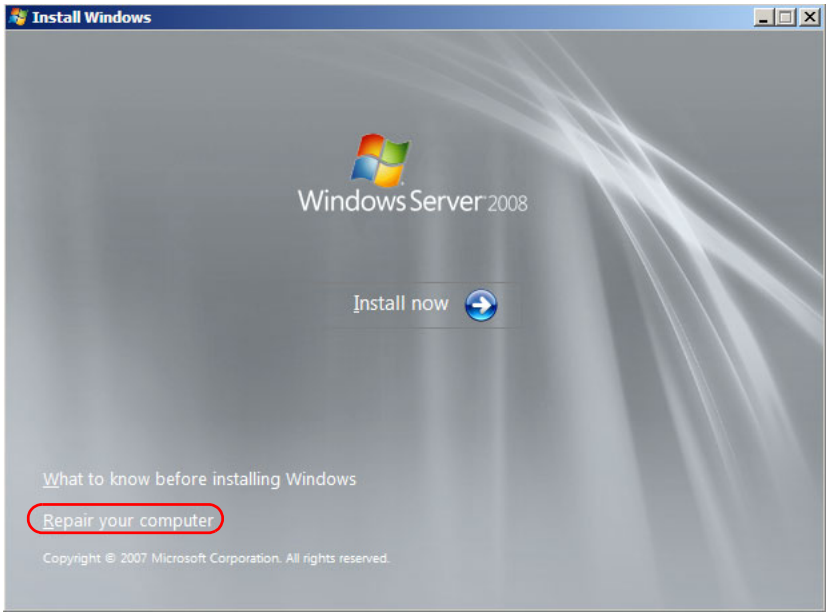
Check that there is not already a floppy disk inserted in the floppy disk drive at this time.

2 When active area is specified on the hard disk, the following message is displayed on the bottom of the window. Press any key while the message is displayed.

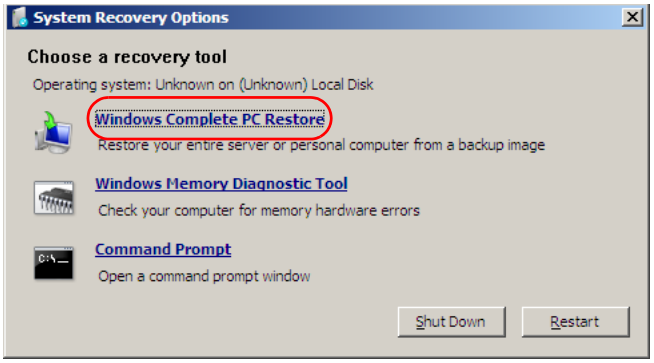
```
Press any key to boot ...
```

The Windows Server 2008 setup window appears.

3 Click [Repair your computer] displayed in the bottom left of the window.



4 Click [Windows Complete PC Restore].



5 Specify the backup type, and click [Next].

When backup data is in a folder on another machine, or when the backup data is not the latest data, select [Restore specific backup].

In this case, the window to specify a restoration target appears after clicking [Next].

Select the backup to be restored and click [Next].

POINT

- When using a shared folder to restore the system, the message [Valid location for backup cannot be found.] is displayed. Click [Cancel].

When the backup data is stored on the network, specify the shared folder in which the backup data is stored from [Advanced Settings].

The window to set the restoration options appears.

6 Perform the settings as required, and click [Next].

The restoration settings completion window appears.

7 Click [Finish].

The restoration start window appears.

8 Check the checkbox, and click [OK].

System restoration starts.

After the restoration has completed, the system is automatically rebooted. After rebooting, the system is restored using the backup data.

IMPORTANT

- For operation with a BitLocker drive encryption set, perform the encryption settings again after the system restoration.

8.6.2 For Windows Server 2003

For Windows Server 2003, only the system file, system configuration, or environment changes during startup can be restored by using Automated System Recovery set.

● Items required

- Windows Server 2003 CD-ROM
- Automated System Recovery floppy disk (created beforehand)
- Backup media (created beforehand)
- Driver disk (for array controller card)
  For drivers to be used and how to create driver disks, refer to "4.4 Creating Maintenance Tools and Driver Disks" (→p.88).

1 Insert the Windows Server 2003 CD-ROM (installation disc) immediately after the server is turned on.

Check that a floppy disk is not inserted in the floppy disk drive.

2 When an active area is set on the hard disk, the following message is displayed at the bottom of the screen. Press any key while the message is displayed.

```
Press any key to boot from CD...
```

The Windows Server 2003 setup screen appears.

3 The following message is displayed at the bottom of the screen. Press the [F6] key.

```
Press F6 if you need to install a third party
SCSI or RAID driver ...
```

IMPORTANT

- Because this message is displayed for only a short time after the setup screen (blue screen) is displayed, press the [F6] key immediately after the screen changes blue.

4 When a message prompting you to press the [F2] key appears under the screen, press the [F2] key while the message is displayed.

A message prompting you to insert the Automated System Recovery floppy disk (created beforehand) appears.

5 Insert the Automated System Recovery floppy disk and follow the window instructions.

6 Install the driver.

Install the following driver according to the used array controller.

- When using the SAS RAID Ctrl (MegaRAID SAS):
  LSI Logic MegaRAID SAS RAID Controller Driver

For the procedure for installing a driver, refer to the following "OS Installation Manually".
http://www.fujitsu.com/global/services/computing/server/ia/driver/

7 Follow the window instructions to restore the system.

- When replacing the floppy disk is required, replace it following the instructions.
- When the message that the driver doesn't pass the Windows logo test for verifying interchangeability with Windows is displayed, select "Yes" and continue installing.
- When inserting media is required, insert the backup media (created beforehand) and perform the process according to the message.

POINT

Notes on Automated System Recovery

- Automated System Recovery does not restore data files.

8.7 Reinstalling the OS

This section explains the procedure for reinstalling the OS.

8.7.1 Checking before OS Reinstallation

■ Optional devices

For notes on installing the OS again with optional devices installed or connected, refer to "2.1.1 Installing Options" (→p.40).

■ Deletion of data from the disc

Reinstalling a disk will delete all the contents of that disk. Please be careful. Save the necessary data and system configuration in a different location. Some drivers and software are not installed together with the OS. Install them after OS installation.

■ Other notes

Other notes are the same as those that apply for first time installation. Please check in advance.

8.7.2 Reinstallation Using ServerStart Floppy Disk

When the previous installation was performed in guide or preconfiguration mode, the ServerStart floppy disk used in that installation can be used again. When the reinstallation is performed with the same configuration as that for the previous installation, you do not have to edit the configuration file on the ServerStart floppy disk. You do not have to configure setting on wizards. After ServerStart starts up, click [Start (OS) Installation] to perform installation.

8.8 Maintenance Service

If the cause of the failure is uncertain or if the original condition cannot be restored, contact an office listed in the "Contact Information" of the "Start Guide".

8.8.1 Contacting Maintenance Support

For "Contact Information", refer to "Start Guide". Before contacting maintenance support, check the following.

POINT

- Fill in each sheet of the "Configuration Sheets", and "Accident Sheet".

● Points to be checked

- Model name and product ID of the server
  They are described on the label on the server. For the label location, refer to "Start Guide".
- Hardware configuration (Types and locations of internal options)
- Configuration information (BIOS Setup Utility settings)
- OS
- LAN/WAN system configuration
- Phenomena (what happened when doing what, what was displayed, etc.)
- Date/time of occurrence
- Environmental settings of the server
- LED statuses

Appendix

This appendix explains the specifications for the server and for its internal options.

A Server Specifications

This section explains the specifications for the server.
The specifications for this server are liable to be updated without any notice. Please be forewarned.

table: Server Specifications.

Item		Functions and Specifications
Type		Diskless Type
Product name		PRIMEGRY RX300 S4
Product ID		PGUR3041A3
Chipset		Intel 5000P
CPU	Standard	Intel® Xeon® Processor E5205 (1.86GHz/6MB)
	Conversion kit	Intel® Xeon® Processor X5260 (3.33GHz/6MB) Intel® Xeon® Processor X5270 (3.50GHz/6MB) Intel® Xeon® Processor E5405 (2GHz/12MB) Intel® Xeon® Processor E5420 (2.50GHz/12MB) Intel® Xeon® Processor X5460 (3.16GHz/12MB) Intel® Xeon® Processor X5470 (3.33GHz/12MB)
	Number of multiplication	1 (Max.2)
Memory	Standard	1GB (DDR2-667 FB-DIMM 512MB × 2)
	Adding size	1GB/2GB/4GB/8GB
	Maximum	48GB (4GB DIMM × 12 slots) Usable memory capacity differs depending on the OS.
PCI slots	Standard	PCI-Express × 4 slots (Low Profile full-size: 3.3V) × 6 PCI-X slot (64bit/133MHz, Low Profile full-size: 3.3V) × 1
Disk Array Controller		SAS RAID Ctrl (Standard): MegaRAID SAS
3.5-inch storage bay	Adding size	73.4GB/146.8GB/300GB (15,000rpm)
	Maximum	1.8TB (300GB × 6)
	Bay	6 bays (2 bays are used when an Internal DAT72 unit is installed).
	I/F	SAS
CD/DVD drive bay		1 bay (standard)
Floppy disk drive		External option (USB connection)
Onboard controller	SAS	N/A (standard SAS RAID Ctrl)
	LAN	Broadcom 5708 (GbE × 1) × 2
	RSB	iRMC2 *1
	Video	iRMC2 / 8MB Video RAM 640 × 480, 800 × 600, 1024 × 768, 1280 × 1024 Display colors: varies depending on the resolution, the OS, etc.
Security Chip		TCG 1.2-compliant *2
External I/O port	Video	1 (analog RGB DSUNB 15 pin)
	Keyboard	1 (PS/2 mini DIN6 pin)
	Mouse	1 (PS/2 mini DIN6 pin)
	USB	4 (USB2.0, front × 2, rear × 2)
	Serial	2 (Dsub 9 pin): One of them is optional.
	Parallel	1 (Dsub 25 pin): Optional
	LAN	3 (Modular (RJ-45) 8 pin), one port is occupied for iRMC2 exclusive use
Keyboard and Mouse		Optional
Power supply unit	Quantity	Standard: 1, Max: 2 (Redundant power supply devices)
	Power/ Connector	100-240VAC (50/60Hz)/bipolar ground type
Fan unit		System fans: 8 (Redundant)
Internal clock precision		± 2 to 3 minutes/month
Power consumption		645W/2322 kJ/h

table: Server Specifications.

Item	Functions and Specifications
Weight	Max. 30kg
Dimension (W × D × H)	445 (483) × 720 (792) × 88 (mm) (2U) ( ): including protrusion
Noise	52dB

*1: The function can be enhanced by Remote Management Ctrl Upgrade kit (PG-RMCU2). For details, refer to "Appendix D Remote Management Controller" (→p.256).
*2: Only available for Windows Server 2008. Refer to the following URL for the notes:
http://primeserver.fujitsu.com/primergy/software/windows/os/2008/

● Supported OS

The following OSes are supported.

- Windows Server 2008 Standard (32-bit)
- Windows Server 2008 Enterprise (32-bit)
- Windows Server 2008 Standard (64-bit)
- Windows Server 2008 Enterprise (64-bit)
- Windows Server 2003, Standard Edition (SP2 or later)
- Windows Server 2003, Enterprise Edition (SP2 or later)
- Windows Server 2003, Standard x64 Edition (SP2 or later)
- Windows Server 2003, Enterprise x64 Edition (SP2 or later)
- Windows Server 2003 R2, Standard Edition (SP2 or later)
- Windows Server 2003 R2, Enterprise Edition (SP2 or later)
- Windows Server 2003 R2, Standard x64 Edition (SP2 or later)
- Windows Server 2003 R2, Enterprise x64 Edition (SP2 or later)
- Red Hat Enterprise Linux ES (v.4 for x86)
- Red Hat Enterprise Linux AS (v.4 for x86)
- Red Hat Enterprise Linux ES (v.4 for EM64T)
- Red Hat Enterprise Linux AS (v.4 for EM64T)
- Red Hat Enterprise Linux 5 (for x86)
- Red Hat Enterprise Linux 5 (for Intel64)

IMPORTANT

The latest information about the supported OS

- For the latest information such as notes on supported OS not described in this manual, refer to the Fujitsu PRIMERGY website (http://primergy.fujitsu.com).

B Specifications for Internal Options

This section explains the specifications for internal options for the server.
When you have bought an internal option as a standard option, check that the package contents the following items before use. Should it happen that items are missing, contact an office listed in the "Contact Information" of "Start Guide".

B.1 CPU

■ Package

- CPU (1)
- Heat sink (1)

■ Specifications

table: CPU Specifications

Item	Function and Specifications						
Product name	Processor Xeon E5205 (1.86GHz)	Processor Xeon X5260 (3.33GHz)	Processor Xeon X5270 (3.50GHz)	Processor Xeon E5405 (2GHz)	Processor Xeon E5420 (2.50GHz)	Processor Xeon X5460 (3.16GHz)	Processor Xeon X5470 (3.33GHz)
Product ID	PG-FG42G	PG-FG42H	PG-FG42N	PG-FG42J	PG-FG42K	PG-FG42L	PG-FG42M
Clock frequency	1.86GHz	3.33GHz	3.50GHz	2GHz	2.50GHz	3.16GHz	3.33GHz
Internal secondary cache capacity	6MB	6MB	6MB	12MB	12MB	12MB	12MB

B.2 Memory

■ Package

- Memory module (2)

■ Specifications

table: Memory Specifications

Item	Function and Specifications			
Product name	Memory Module-1GB	Memory Module-2GB	Memory Module-4GB	Memory Module-8GB
Product ID	PG-RM1CG	PG-RM2CG	PG-RM4CG	PG-RM8CG
Modules	512MB DDR2-667 FBD × 2	1GB DDR2-667 FBD × 2	2GB DDR2-667 FBD × 2	4GB DDR2-667 FBD × 2
Capacity	1GB	2GB	4GB	8GB
Clock frequency	667MHz			
PIN count	240 PIN			

B.3 Memory Board

■ Package

- Memory Expansion Board (1)

■ Specifications

table: Memory Board Specification

Item	Function and Specifications
Product name	Memory Expansion Board
Product ID	PG-RB108

B.4 Internal Hard Disk Units

■ Package

- Internal hard disk unit (1)

■ Specifications

table: Internal Hard Disk Unit Specifications

Item	Function and Specifications		
Product name	HDD SAS 15k 73GB hot plug 3.5inch	HDD SAS 15k 147GB hot plug 3.5inch	HDD SAS 15k 300GB hot plug 3.5inch
Product ID	PG-HDB75A	PG-HDB45A	PG-HDB35A
Interface	SAS (Serial Attached SCSI)		
Storage media	3.5-inch hard disk		
Memory capacity *1	73.4GB	146.8GB	300GB
Maximum data transfer speed	3Gbit/s		
Average latency speed	2.00ms		
Rpm	15,000rpm		
Dimension (W × D × H)	101.6 × 146.0 × 25.4 (mm)		
Weight *2	800g		

*1: The value indicates memory capacity of the formatted hard disk (1GB = 1000^3 bytes).
*2: A Hot plug carrier is not included.

B.5 Parallel Port Option Specifications

■ Package

- Parallel Port Option (1)

■ Specifications

table: Parallel port option specifications

Item	Functions and Specifications
Product name	Parallel Port Option
Product ID	PG-PP05

B.6 Serial Port Option Specifications

■ Package

- Serial Port Option (1)

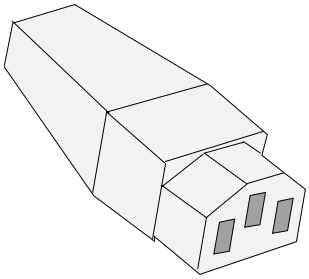
■ Specifications

table: Serial port option specifications

Item	Functions and Specifications
Product name	Serial Port
Product ID	PG-COM03

B.7 Power Cord Selection

The power cord for this unit has been packed separately and has been selected according to the country of destination. It must be used to prevent electric shock. Use the following guidelines if it is necessary to replace the original cord set. The female receptacle of the cord set must meet CEE-22 requirements (see Figure).

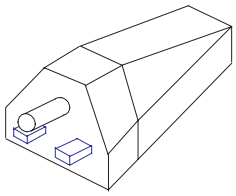


■ For the United States and Canada

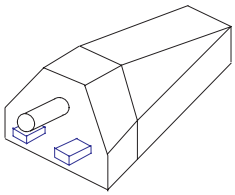
Use a UL listed and CSA labeled cord set consisting of a three conductor cord with a maximum length of 15 feet. For units which stand on a desk or table, type SVT or SJT cord sets should be used. For units which stand on the floor, only SJT type cord sets should be used. The cord set must be selected according to the current rating for your unit. Please consult the table below for the selection criteria for power cords used in the United States and Canada.

table: Selection Criteria for Power Cords Used in the United States and Canada

Cord Type	Size of Conductors in Cord	Maximum Current Rating of Unit
SJT	18 AWG 16 AWG 14 AWG	10 Amps 12 Amps 12 Amps
SVT	18 AWG 17 AWG	10 Amps 12 Amps



- Parallel
  For units set at 115 V: Use a parallel blade, grounding type attachment plug rated 15 A, 125 V.



- Tandem
  For units set at 230 V: Use a tandem blade, grounding type attachment plug rated 15 A, 250 V.

● For units set at 230 V (outside of the United States and Canada):

Use a cord set consisting of a minimum AWG according to the table above and a grounding type attachment plug rated 15 A, 250 V. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed and should be marked HAR.

■ For the United Kingdom

Should the plug on the flexible cord not be of the type for your socket outlets, do not use an adapter but remove the plug from the cord and discard. Carefully prepare the end of the supply cord and fit a suitable plug.

- This appliance must be earthed.

POINT

- The wires in this mains lead are colored in accordance with the following code:
  - Green and Yellow: Earth
  - Blue: Neutral
  - Brown: Live

As the colors of the wires in the mains lead of this appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows:

- The wire which is colored Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or colored Green or Green and Yellow.
- The wire which is colored Blue must be connected to the terminal which is marked with the letter N or colored Black.
- The wire which is colored Brown must be connected to the terminal which is marked with the letter L or colored Red.

C Remote Control Function

This server supports a remote control function.
When a personal computer (PC) is connected to the serial port of this server with an RS-232C cross cable, the PC can be used to control (turn on/off and reset) the server power supply (remote control).

C.1 Preparation for Using Remote Control Function

To enable the remote control function, perform the procedures in the following sections.

- Configuring the BIOS
- Connecting the Server to a PC
- Configuring the Terminal Software (PC)

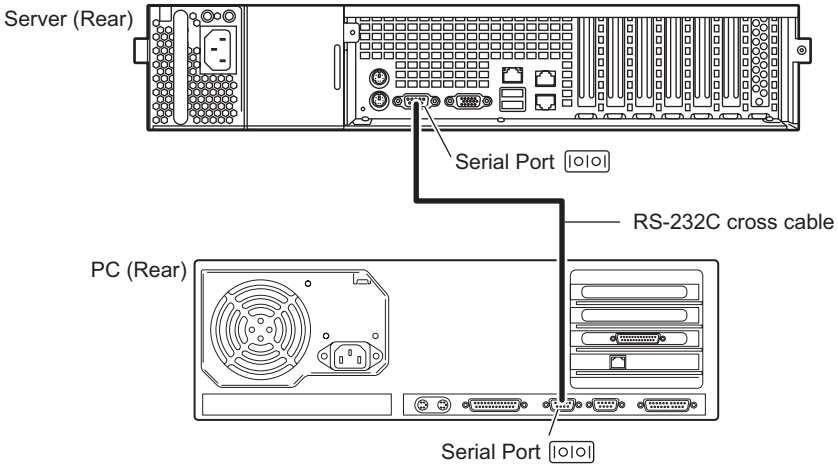
■ Configuring the BIOS

To use the function of the server management port, perform the following setting using the BIOS Setup Utility.

1. Turn on the server. Press the [F2] key during POST to start up the BIOS Setup Utility.
2. Select [Peripheral Configuration] from the [Advanced] menu, and set the following items.
   - Set [Serial 1] to [Disabled]
   - Set [Serial Multiplexer] to [iRMC]
3. Select [Saving Changes & Exit] in the [Exit] menu to exit the BIOS Setup Utility.

■ Connecting the server to a PC

Connect the server to a PC using an RS-232C cross cable.



■ Configuring the terminal software (PC)

Perform settings for the remote control function using terminal software on the PC.

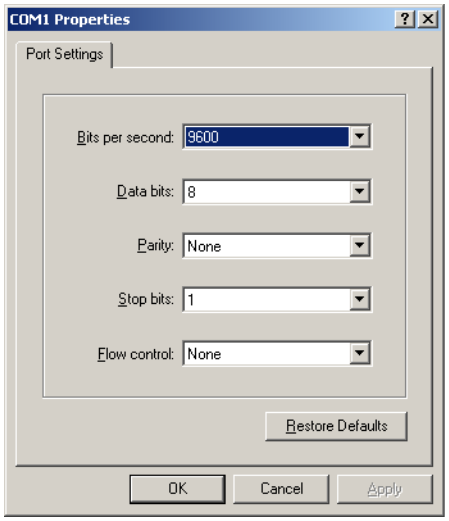
● Port configuration

Configure the port on the PC as follows:

table: Port Settings

Item	Contents
Bits per second	9600
Data bits	8
Parity	Not applied
Stop bits	1
Flow control	Not applied

(Window example)



C.2 Remote Power Supply Control

This section explains how to control the server power supply remotely.
The server power supply can be remote-controlled with the terminal software on the PC.

■ Starting up the remote controller

1 Start up the terminal software.

The remote control window appears.

```
**************************************
*  Welcome to PRIMERGY Remote Manager  *
*  Firmware Revision x.xxA (x.xx)      *
*  SDRR *.**   ID 0203  RX300S4        *
*  Firmware built xxx xx xxxx xx:xx:xx *
**************************************

System Type  : PRIMERGY RX300 S4
System ID    : xxxxxxxx
System Name  : RX300S4-2 (xxx.xxx.xxx.xxx)
System OS    : xxxxxxxx
System Status: OK
Power Status : On

Please enter user name :
Please enter pass phrase :
```

Power state is displayed next to "Power Status".

table: Meaning of [Power Status]

Display	Description
On	The server is powered on.
Off	The server is powered off.

2 When "Please enter user name" appears, enter the user name and press the [Enter] key.

3 When "Please enter pass phrase" appears, enter the password and press the [Enter] key.

Note that the password is case-sensitive. As shown below, the characters you have entered are displayed as asterisks.

```
Please enter pass phrase: *****
```

The remote control [Main] menu appears.

```
****************************************
*  Welcome to PRIMERGY Remote Manager  *
*  Firmware Revision x.xxA (x.xx)      *
*  SDRR *.**   ID 0203  RX300S4        *
*  Firmware built xxx xx xxxx xx:xx:xx *
****************************************

System Type  : PRIMERGY RX300 S4
System ID    : xxxxxxxx
System Name  : RX300S4-2 (xxx.xxx.xxx.xxx)
System OS    : xxxxxxxx
System Status: OK
Power Status : On

    Main Menu

(1) System Information...
(2) Power Management...
(3) Enclosure Information...
(4) Service Processor...

(c) Change password
(r) Console Redirection (EMS/SAC)
(s) Start a Command Line shell...

Enter selection or (0) to quit:
```

4 Press the [2] key and select "Power Management".

The [Power Management] menu appears.

```
****************************************
*  Welcome to PRIMERGY Remote Manager  *
*  Firmware Revision x.xxA (x.xx)      *
*  SDRR *.**   ID 0203  RX300S4        *
*  Firmware built xxx xx xxxx xx:xx:xx *
****************************************

System Type  : PRIMERGY RX300 S4
System ID    : xxxxxxxx
System Name  : RX300S4-2 (xxx.xxx.xxx.xxx)
System OS    : xxxxxxxx
System Status: OK
Power Status : On

    Power Management Menu

(1) Immediate Power Off
(2) Immediate Reset
(3) Power Cycle
(*) Power On

(*) Graceful  Power Off (Shutdown)
(*) Graceful  Reset     (Reboot)

Enter selection or (0) to quit:
```

5 Select a menu and press the corresponding number key.

"*" is displayed in the bracket of unavailable menu.

table: Remote Control Menu

Menu name	Key	Operation
Immediate Power Off	[1]	Turns the server off.
Immediate Reset	[2]	Resets the server.
Power Cycle	[3]	Turns the server off and back on again. When Windows is operating, the server restarts after the OS is shut down.
Power On	[4]	Turns the server on.
Graceful Power Off (Shutdown)	[5]	Shuts down the OS and turns the server off. When Windows is operating, the server is turned off after the OS is shut down.
Graceful Reset	[6]	Shuts down the OS and resets the server. When Window is operating, the server is reset after the OS is shut down.
-	[0]	Exits the remote controller.

6 If pressing keys, except the [0] key, perform the following operation.

When "Do you really want reboot (yes/no)?" appears, enter "yes" and press the [Enter] key.

For [3], [5] or [6], the pop-up window "System shutdown due to <software command> in 60 seconds! Press Cancel to abort!" appears when Windows is operating. Select [OK].

D Remote Management Controller

This section explains functions and features of the Remote Management Controller (iRMC) and the optional Remote Management Controller Upgrade (PG-RMCU2).

D.1 Overview of the Remote Management Controller

This server has the Remote Management Controller (iRMC2) on the baseboard. The Remote Management Controller makes the high-quality, high-reliability remote service board function possible. To use the console redirection function and the remote storage function, the license key of optional Remote Management Controller Upgrade (PG-RMCU2) is necessary. For details of Remote Management Controller Upgrade (PG-RMCU2), refer to "D.4 Remote Management Controller Upgrade (PG-RMCU2)" (→p.259).

■ Features of the Remote Management Controller

- The Remote Management Controller (iRMC2) and LAN are provided on the baseboard. This makes possible to control power supply and reset of the server without depending on the state of the server.
- The console redirection function and the remote storage function can be used by optional Remote Management Controller Upgrade (PG-RMCU2).
- It provides with LAN interface.
- It has the server monitoring function (monitoring server's hang/temperature/voltage).
- It has the server abnormality notification function (it is possible to notify abnormally at the server hang).
- It is possible to display the server status and control power supply/reset of the server by using the Web interface.

IMPORTANT

- When the baseboard is replaced, the Remote Management Controller may have to be set again. In case of reconfiguration, write down the set values in configuration sheets.

D.2 Preparation for Using Remote Management Controller

To enable the Remote Management Controller, perform the following procedure.

- Configuring the BIOS
- Connecting the Server to a PC

■ Configuring the BIOS

To use the function of the Remote Management Controller, perform the following setting using the BIOS Setup Utility.

1. Turn on the server. Press the [F2] key during POST to start up the BIOS Setup Utility.

2. Select the [Advanced] menu – [IPMI] – the [LAN Settings] submenu, and set the each item.

   For the detailed setting items, refer to "■ LAN Settings submenu" (→p.198).

3. From the [Exit] menu, select [Saving Changes & Exit] to exit the BIOS Setup Utility.

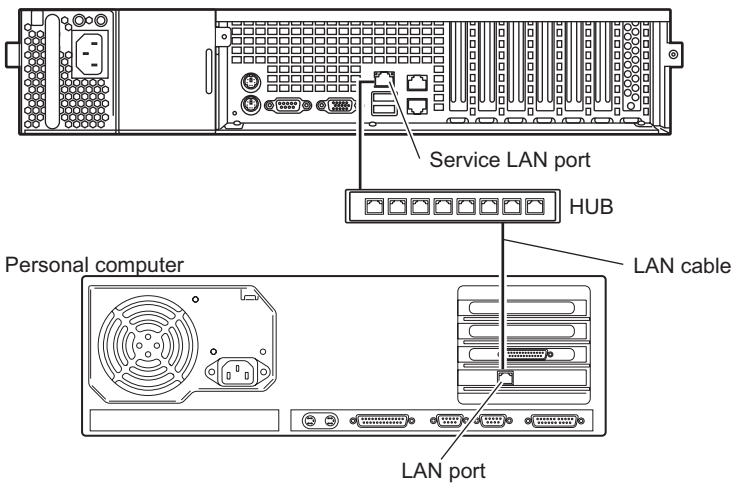
IMPORTANT

- Save the setting information of set parameters using the Server Management Tools. For details, refer to "4.3 Storing the System Configuration Information" (→p.84).

■ Connecting the server to a PC

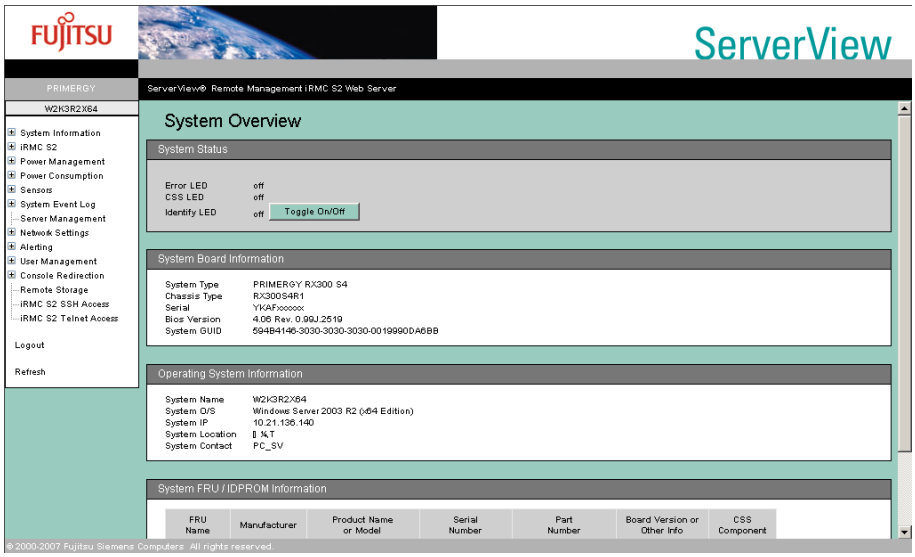
Connect the server to a PC using a LAN cable.

Server (Rear)



D.3 Window of the Remote Management Controller

The Remote Management Controller uses the Web interface function.
The following window appears when starting the Remote Management Controller.



The following functions are available.

table: Functions of the Remote Management Controller

Item	Description
System Information	Displays information of the system on which the Remote Management Controller is running.
iRMC S2	Displays the Remote Management Controller information and configures the controller.
Power Management	Sets the power supply control.
Power Consumption	Displays server power information.
Sensor	Displays the status of each server sensor such as fan, temperature and power supply.
System Event Log	Displays the system event log stored on the baseboard.
Server Management	Displays server management information.
Network Settings	Configures network settings of the Remote Management Controller.
Alerting	Configures the SNMP trap and alert mail settings.
User Management	Sets information of user logging on the Remote Management Controller.
Console Redirection	Configures the console redirection and starts it up.
Remote Storage	Displays the Remote Storage unit status, and configures the Remote Storage Server.
iRMC S2 SSH Access	Displays the iRMC SHH Access window.
iRMC S2 Telnet Access	Displays the iRMC Telnet Access window.
Logout	Logs out from the session of the Remote Management Controller Web interface.
Refresh	Refreshes the Web interface window of the Remote Management Controller.

For usage of the Remote Management Controller, refer to "Remote Management Controller User's Guide".

■ Comparison with server management function of ServerView

ServerView, software provided with the server, can manage the server remotely if OS is normally operating. The Remote Management Controller can operate even in the state of the server hang, therefore, it is effective when the server cannot be monitored by ServerView.

D.4 Remote Management Controller Upgrade (PG-RMCU2)

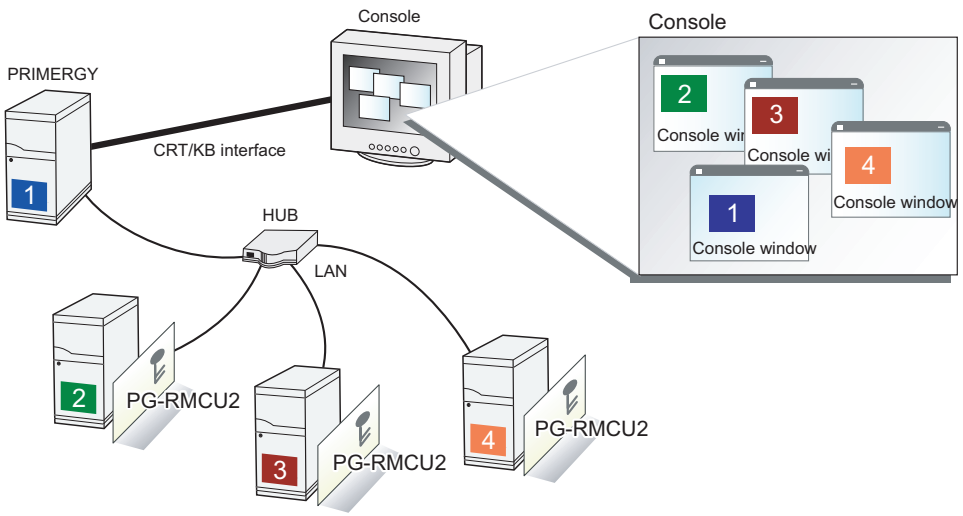
This option is a license key to make Remote Management Controller's console redirection function and remote storage function effective.

table: Specification of Remote Management Controller Upgrade

Item	Specifications
Product name	Remote Management Ctrl Upgrade kit
Product ID	PG-RMCU2
Function	Console redirection function, Remote storage function

● Console redirection function

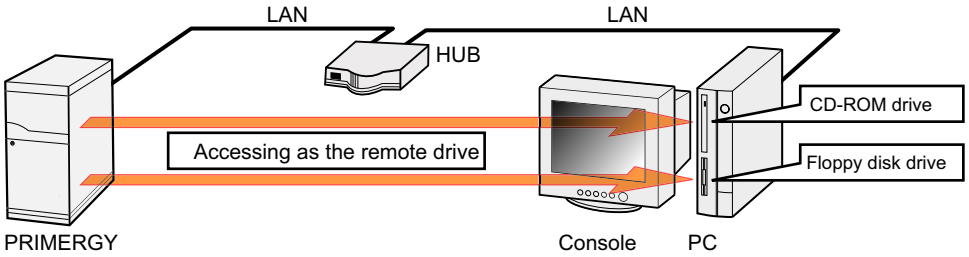
The server can be remotely operated by using console redirection function. Remote operation such as the keyboard and mouse operation, and seeing the contents of the display of the server are possible.
By using console redirection function, it makes possible to achieve the function of the KVM switching in the environment where multiple servers are used. The composition of the multiple servers' environment is shown in the figure below.



Remote storage function

This is a function to recognize the external memory device connected by using the console redirection function as a remote device of the server.

The configuration of the remote storage function is shown in the figure below.



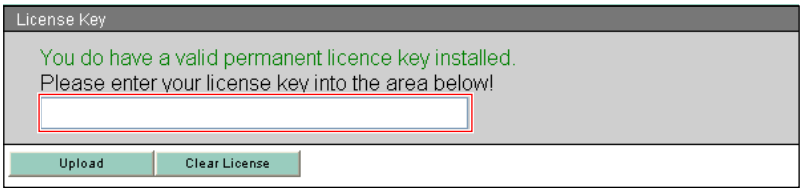
POINT

- The following devices can be used in the remote storage connection. However, the writing into the DVD drive is not supported.
  - Internal floppy disk drive
  - ATAPI CD-ROM drive
  - ATAPI DVD drive
  - USB floppy disk drive
  - USB CD-ROM drive

License key settings

Enter the license key from the Web to make effective the console redirection function and the remote storage function.

For details of the setting method, refer to the manual supplied with PG-RMCU2.



E Notes on Using External FDD (USB)

This section explains notes on using a USB floppy disk drive.

■ Notes on FDD (USB) recognition at server startup

If the FDD (USB), with a floppy disk inserted, is not connected at server startup, BIOS cannot recognize the FDD (USB). During OS installation of Windows/Linux, or when executing Windows Server 2003 ASR, make sure to connect the FDD (USB) with a floppy disk inserted before server startup.

■ Notes on floppy disk exchange recognition when installing the OS manually and performing system recovery

When performing system recovery or installing Windows manually using the Windows backup data with the following software, system recovery/installation might not be performed properly. This is caused by the device driver being unreadable due to recognition failure of the floppy disk media replacement.

- Windows Server 2003 Automated System Recovery function

After pressing the [Enter] key in accordance with the procedure on the screen, if the floppy disk access LED on the FDD (USB) does not turn on and the floppy disk is not accessed, follow the procedure below.

1. Eject the floppy disk and wait for 2 seconds or longer, then press the [Enter] key several times.

2. Insert the floppy disk and wait for 2 seconds or longer, then press the [Enter] key.
   If the floppy disk cannot be accessed, perform the procedure above again.

F Recycling

This section explains how to recycle this server.

■ Disposing of the server

When scrapping this server, contact an office listed in the "Contact Information" of "Start Guide". This server must be disposed of as industrial waste.
Furthermore, if the server is disposed of as it is, someone else may gain access to the information contained on the hard disks. It is therefore recommended that all drives be formatted before disposal. However, just formatting or deleting files may not avoid the risk that the data is restored and used for wrongful purposes. If confidential or private information is saved, in order to make it impossible to be restored, it is recommended to use third-party data wiping tools.

■ Disposing of used-up batteries

Used-up batteries must be disposed of as industrial waste and therefore require special processing. Let a licensed industrial waste disposal company take care of disposal.

■ Disposing of liquid crystal displays

Liquid crystal displays must be disposed of as industrial waste and therefore require special processing. Let a licensed industrial waste disposal company take care of disposal.

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PRIMERGY RX300 S4

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